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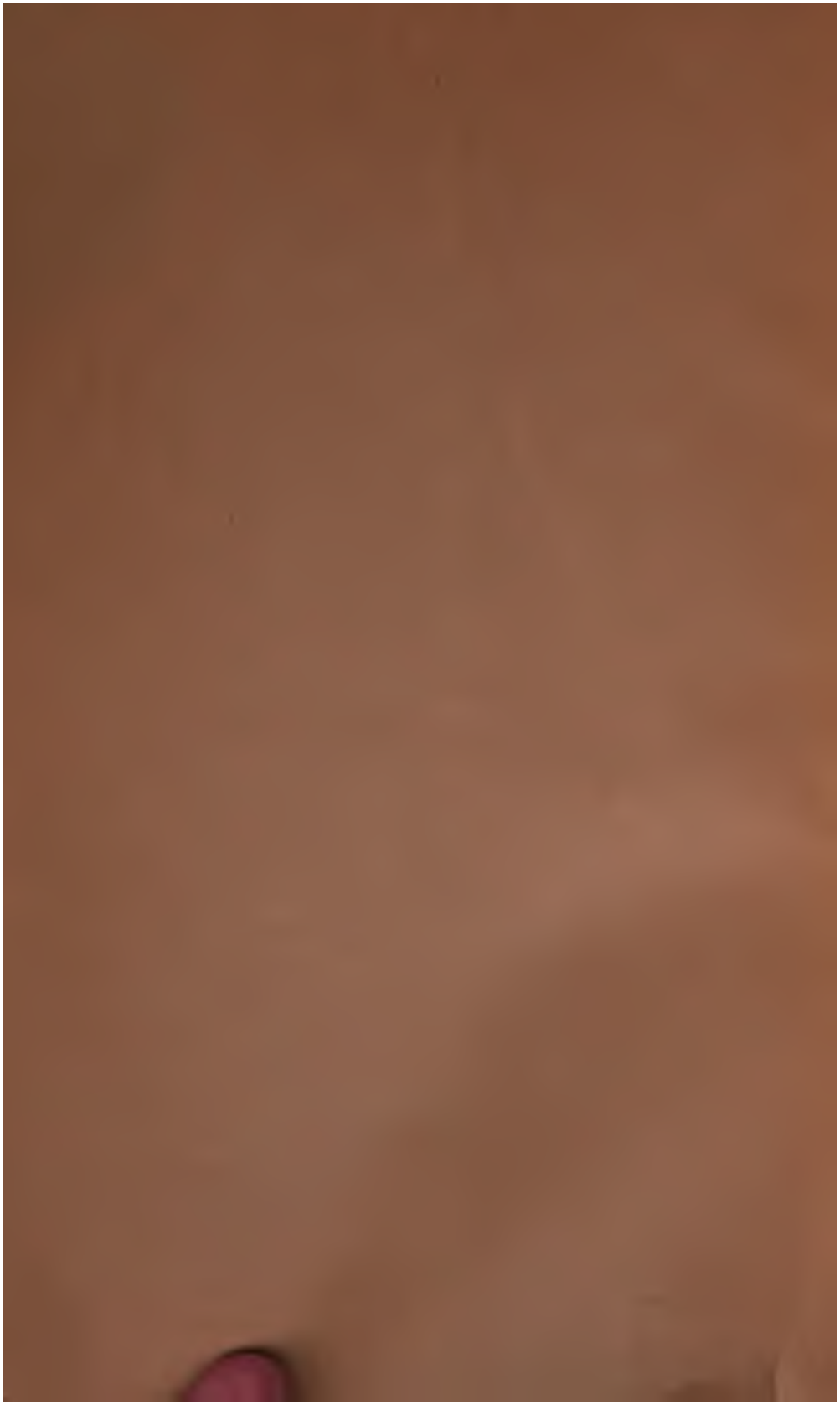
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STONE, WITMER, Acad. Nat. Sciences, Philadelphia, Pa.....1892
WIDMANN, OTTO, 5105 Morgan St., St. Louis, Mo.....1884

HONORARY FELLOWS.

BERLEPSCH, Count HANS VON, Schloss Berlepsch, Gertenbach, Cassel, Germany.....1890
BLANFORD, Dr. WILLIAM T., 72 Bedford Gardens, Kensington, London, W.....1895
BOCAGE, Prof. J. V. BARBOZA DU, Royal Museum, Lisbon.....1883
DRESSER, HENRY EELES, 28 Queensborough Terrace, London, W...1883
FINSCH, Dr. OTTO, 19*b* Altewickring, Braunschweig, Germany.....1883
GIGLIOLI, Dr. HENRY HILLYER, Director Royal Zoölogical Museum, Florence.....1883
HARTERT, ERNST, Zoölogical Museum, Tring, England.....1902
HARVIE-BROWN, JOHN A., Dunipace House, Larbert, Stirling, Scotland.....1902
HUME, ALLAN OCTAVIAN, The Chalet, Kingswood Road, Upper Norwood, London, S. E.....1883
MEYER, Dr. A. B., Care of R. Friedländer & Sohn, Carlstrasse, 11, Berlin, N. W. 6.....1900
NEWTON, Prof. ALFRED, Magdalene College, Cambridge, England...1883

REICHENOW, Dr. ANTON, Königl. Mus. für Naturkunde, Invalidenstrasse, 43, Berlin.....1891
SALVADORI, Prof. Count TOMMASO, Royal Zoöl. Museum, Turin.....1883
SAUNDERS, HOWARD, 7 Radnor Place, Hyde Park, London, W.....1884
SCLATER, Dr. PHILIP LUTLEY, 3 Hanover Sq., London, W.....1883
SHARPE, Dr. RICHARD BOWDLER, British Museum (Natural History), Cromwell Road, London, S. W.....1883
WALLACE, Prof. ALFRED RUSSEL, Broadstone, Wimborne, Dorset, England.....1883

CORRESPONDING FELLOWS.

ALFARO, ANASTASIO, San José, Costa Rica.....1888
ARRIGONI DEGLI ODDI, Count Dr. E., University of Padua, Italy....1900
BLASIUS, Dr. RUDOLPH, Braunschweig, Germany.....1884
BLASIUS, Dr. WILHELM, Braunschweig, Germany.....1884
BULLER, Sir WALTER LAWRY, 81 Eaton Terrace, London, S. W.....1883
BUREAU, Dr. LOUIS, Ecole de Médicine, Nantes, France.....1884
BUTLER, Lieut.-Col. E. A., Plumton House, Bury St. Edmunds, Suffolk, England.....1884
BÜTTIKOFER, J., Zoölogical Gardens, Rotterdam, Holland.....1886
CAMPBELL, ARCHIBALD JAMES, Melbourne, Australia.....1902
CHAMBERLAIN, MONTAGUE, Cambridge, Mass.....1901
CLARKE, WILLIAM EAGLE, Science and Art Museum, Edinburgh....1889
COLLETT, Prof. ROBERT, Zoölogical Museum, Christiania, Norway...1883
DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Stirling, Scotland.....1883
DOLE, SANFORD B., Honolulu, Hawaiian Islands.....1888
DUBOIS, Dr. ALPHONSE, Museum Nat. History, Brussels.....1884
DUGÈS, Prof. ALFREDO, Colegio del Estado, Guanajuato, Mexico....1884
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna.....1883
EVANS, ARTHUR H., 9 Harvey Road, Cambridge, England.....1899
FEILDEN, Lieut.-Col. H. W., West House, Wells, Norfolk, England..1884
FERRARI-PEREZ, Prof. FERNANDO, Naturalist Mexican Geol. Expl. Commission, Pueblo, Mexico.....1885
FREKE, PERCY EVANS, 7 Limes Road, Folkstone, Kent, England....1883
FÜRBRINGER, Prof. MAX, Director Anatom. Institute, University of Heidelberg, Heidelberg, Germany.....1891
GADOW, Dr. HANS, Zoölogical Museum, Cambridge, England.....1884
GIRTANNER, Dr. A., St. Galle, Switzerland.....1884
GODMAN, F. DU CANE, 10 Chandos Street, Cavendish Sq., London...1883
GODWIN-AUSTEN, Lieut.-Col. H. H., Shalford House, Guilford, England.....1884

GOELDI, Dr. EMIL A., Para, Brazil....1903
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris....1883
GRANT, WILLIAM R. OGILVIE, 29 Elvaston Place, London, S. W....1899
GURNEY, JOHN HENRY, Keswick Hall, Norwich, England....1883
HARTING, JAMES EDMUND, Linnæan Society, Burlington House, Piccadilly, London....1883
HAYEK, Dr. GUSTAV VON, Vienna....1884
HELLMAYR, Dr. E. C., Zoölogical Museum, Tring, England....1903
HENSON, HARRY V., Yokohama....1888
HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, Westbourne Park, London, W....1895
IHERING, Dr. HERMANN VON, Museu Paulista, Sao Paulo, Brazil....1902
KNUDSON, VALDEMAR, Kauai, Hawaiian Islands....1888
KRUKENBERG, Dr. E. F. W., Würzburg, Germany....1884
KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece....1884
LEGGE, WILLIAM V., Cullenswood House, St. Mary's, Tasmania....1891
MACFARLANE, ROBERT, Winnipeg, Manitoba....1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary.1884
MENZBIER, Dr. M., Imperial Society of Naturalists, Moscow....1884
NAMIYE, M., Tokio....1886
NICHOLSON, FRANCIS, 84 Major St., Manchester, England....1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales..1902
OATES, EUGENE WILLIAM, 1 Carlton Gardens, Ealing, London, W...1884
PALMÉN, Dr. J. A., Helsingfors, Finland....1883
PYCRAFT, W. P., British Museum (Nat. Hist.), Cromwell Road, London, S. W....1902
RAMSEY, E. P., Sydney, New South Wales....1884
RINGER, FREDERIC, Nagasaki....1888
ROTHSCHILD, Hon. WALTER L., Zoölogical Museum, Tring, England.1898
SCHALOW, HERMAN, 15 Schleswiger Ufer, Berlin, N. W....1884
SHELLEY, Capt. G. E., 39 Edgerton Gardens, South Kensington, London, S. W....1884
SUCSHKIN, Dr. PETER, Imperial University, Moscow....1903
THEEL, Dr. HJALMAR, University of Upsala, Upsala, Sweden....1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR RITTER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria....1884
WATERHOUSE, F. H., 3 Hanover Square, London, W....1889
WINGE, Dr. HERLUF, Copenhagen....1903
WORCESTER, Prof. DEAN C., Manila, P. I....1903
ZELEDON, Don José C., San José, Costa Rica....1884

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ALLISON, ANDREW, Ellisville, Miss.....1902
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BAILEY, Mrs. VERNON, 1834 Kalorama Ave., Washington, D. C.....1901
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BARTSCH, PAUL, Smithsonian Inst., Washington, D. C.....1902
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BROWN, HERBERT, Yuma, Arizona.....1901
BRUNER, Prof. LAWRENCE, Univ. of Nebraska, Lincoln, Neb.....1901
BRYAN, WILLIAM ALANSON, Bishop Museum, Honolulu, H. I.....1901
BURNS, FRANK L., Berwyn, Pa.....1901
BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind...1901
CHERRIE, GEORGE K., Mus. Brooklyn Inst., Eastern Parkway, Brooklyn, N. Y.....1901
CLARK, AUSTIN HOBART, 107 Audubon Road, Boston, Mass.....1905
CLARK, Prof. HUBERT LYMAN, Museum of Comparative Zoölogy, Cambridge, Mass.....1902
DAGGETT, FRANK S., 441 Postal Telegraph Building, Chicago, Ill....1901
DAWSON, Rev. WILLIAM LEON, 5528 15th Ave. N. E. Seattle, Wash..1905
DEANE, WALTER, 29 Brewster St., Cambridge, Mass.....1901
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HARDY, MANLY, 159 Wilson St., Brewer, Maine.....1901
HOFFMANN, RALPH, Belmont, Mass.....1901
HOWELL, ARTHUR H., Dept. of Agriculture, Washington, D. C.....1902
JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa.....1904
JEFFRIES, WILLIAM AUGUSTUS, 11 Pemberton Square, Boston, Mass.1901
JOB, Rev. HERBERT K., Kent, Conn.....1901
JORDAN, Prof. DAVID STARR, Stanford University, Cal.....1901
KNOWLTON, F. H., U. S. Nat. Museum, Washington, D. C.....1902
MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass.....1901

MAILLIARD, JOHN W., 310 California St., San Francisco, Cal.....1901
MAILLIARD, JOSEPH, San Geronimo, Cal.....1901
MCGREGOR, RICHARD C., Govt. Laboratories, Manila, P. I.....1901
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MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.....1903
MORRIS, ROBERT O., 72 Temple St., Springfield, Mass.....1904
MURDOCH, JOHN, 38 Whiting St., Roxbury, Mass.....1901
NORTON, ARTHUR H., Mus. Nat. Hist., 22 Elm St., Portland, Maine.1902
PEARSON, T. GILBERT, Greensboro, N. C.....1902
PENNOCK, CHARLES J., Kennett Square, Pa.....1901
PREBLE, EDWARD A., Dept. of Agriculture, Washington, D. C.....1901
PRICE, WILLIAM W., Alta, Cal.....1901
RALPH, Dr. WILLIAM L., U. S. Nat. Museum, Washington, D. C.....1901
RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash.....1902
RHOADS, SAMUEL N., 36 Estaugh Ave., Haddonfield, N. J.....1901
RILEY, JOSEPH H., Falls Church, Va.....1905
RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C.1901
ROBINSON, Capt. WIRT, U. S. A., Fort Totten, Long Island, N. Y....1901
SETON, ERNEST THOMPSON, Cos Cob, Conn.....1901
SILLOWAY, PERLEY MILTON, Lewistown, Montana.....1902
SNODGRASS, ROBERT EVANS, 322 7th St., San Francisco, Cal.....1903
SORNBORGER, JEWELL D., Ipswich, Mass.....1901
STEPHENS, FRANK, University and Fillmore Aves., San Diego, Cal...1901
STRONG, Dr. REUBEN M., Dept. Zoöl., Univ. of Chicago, Chicago, Ill.1903
THAYER, ABBOTT H., Monadnock, N. H.....1901
THAYER, JOHN ELIOT, Lancaster, Mass.....1905
TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa.....1901
TORREY, BRADFORD, Newton Lower Falls, Mass.....1901
TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City.1901
TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston, Mass.1905
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.....1901
WHITMAN, Prof. CHARLES OTIS, 5238 Woodlawn Ave., Chicago, Ill..1902
WOLCOTT, Dr. ROBERT H., Univ. of Nebraska, Lincoln, Neb.....1903
WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.....1901

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ABBOTT, GERARD A., 945 Marquette Bldg., Chicago, Ill.....1904
ADAMS, C. WALLACE, 947 Rhode Island Ave. N. W., Washington, D. C.1901
ADAMS, Miss EMILY BELLE., 167 Maple St., Springfield, Mass.....1900
AIKEN, CHARLES EDWARD HOWARD, 2 E. Kiowa St., Colorado Springs, Colo.....1898

AIKEN, Hon. JOHN, Greenfield, Mass.....1905
ALLEN, CLARENCE JONES, Box 528, Milwaukee, Wis.....1899
ALLEN, Mrs. EUSTACE L., 859 Prospect Ave., Hartford, Conn.....1904
ALLISON, WILLIAM B., 1320 St. Charles Ave., New Orleans, La.....1905
AMES, J. H., 62 Charles St., Toronto, Ontario.....1895
ANDERSON, Mrs. J. C., Englewood, N. J.....1903
ANGELL, WALTER A., 37 N. Main St., Providence, R. I.....1901
ANTES, FRANK T., Box 96, Williamstown, Mass.....1904
ARCHBOLD, JOSEPH A., 107 Hodge Ave., Buffalo, N. Y.....1903
ARMSTRONG, EDWARD E., 5468 Washington Ave., Chicago, Ill.....1904
ARNOLD, EDWARD, 126 Van Buren St., Battle Creek, Mich.....1894
ARNOW, ISAAC F., St. Marys, Ga.....1903
ATKINSON, GEORGE E., Portage la Prairie, Manitoba.....1903
BABSON, W. A., South Orange, N. J.....1901
BACON, CARRINGTON C., Imboden, Ark.....1890
BAGG, EGBERT, 424 Genesee St., Utica, N. Y.....1883
BAILEY, HAROLD H., 321 54th St., Newport News, Va.....1903
BAIRD, Miss LUCY HUNTER, 1703 Rittenhouse St., Philadelphia, Pa..1899
BAKER, ARTHUR BENONI, 1845 Lanier Ave., N. W., Washington, D. C.1902
BALDWIN, ROGER N., 15 Milton Place, Boston, Mass.....1904
BALL, Mrs. BENNET F., Oakville, Conn.....1905
BALL, Miss HELEN AUGUSTA, 43 Laurel St., Worcester, Mass.....1893
BANGS, EDWARD APPLETON, 501 Pemberton Bldg., Boston, Mass....1884
BARBOUR, Rev. ROBERT, 62 Walnut St., Montclair, N. J.....1902
BARBOUR, THOMAS, Mus. of Comp. Zoölogy, Cambridge, Mass.....1903
BARBOUR, Mrs. WILLIAM D., 45 W. 35th St., New York City.....1901
BARNARD, Judge JOB, 1306 Rhode Island Ave., Washington, D. C.....1886
BARNES, Hon. R. MAGOON, Lacon, Ill.....1889
BAXTER, GEORGE STRONG, Jr., 17 William St., New York City.....1894
BAYNES, ERNEST HAROLD, Meriden, N. H.....1904
BEARD, DANIEL CARTER, 87 Bowne Ave., Flushing, N. Y.....1887
BEAUPRE, EDWIN, Kingston, Ontario.....1905
BECK, ROLLO HOWARD, Berryessa, Cal.....1894
BEERS, HENRY W., 91 Denver Ave., Bridgeport, Conn.....1895
BENNETTS, WILLIAM J., 1941 1st St., N. W., Washington, D. C.....1901
BERGTOLD, Dr. W. H., 1460 Clayton Ave., Denver, Colo.....1889
BERIER, DE LAGNEL, Ridgwood, N. J.....1885
BIDDLE, Miss EMILY WILLIAMS, Lenox, Mass.....1898
BIGELOW, HENRY BRYANT, Cohasset, Mass.....1897
BIGELOW, HOMER LANE, Old Orchard Road, Chestnut Hill, Mass....1902
BIGELOW, JOSEPH SMITH, Jr., Cohasset, Mass.....1896
BIGNELL, Mrs. EFFIE, 135 College Ave., New Brunswick, N. J.....1899
BIRNIE, WILLIAM A., Box 14, Springfield, Mass.....1904
BLACKWELDER, ELIOT, Univ. of Wisconsin, Madison, Wis 1895
BLAIN, Dr. ALEX. W., Jr., Harper Hospital, Detroit, Mich.....1901
BLAKE, FRANCIS G., Dartmouth College, Hanover, N. H.....1901

BLATCHLEY, W. S., 1530 Parke Ave., Indianapolis, Ind.....1895
BLOOMFIELD, Mrs. C. C., 723 Main St. W., Jackson, Mich.....1901
BLOUNT, HENRY F., "The Oaks," Washington, D. C.....1905
BLUNT, Miss ELIZA SINCLAIR, Elizabethtown, N. Y.....1901
BOEWE, MAX, 15 King St., Taunton, Mass.....1903
BOGERT, WILLIAM S., Box 53, Leonia, N. J.....1904
BOHLMAN, HERMAN T., 46 Ninth St., N., Portland, Oregon.....1901
BOND, HARRY L., Lakefield, Minn.....1890
BOURN, ALLEN, 84 Ashburton Ave., Yonkers, N. Y.....1905
BOWDISH, B. S., Demarest, N. J.....1891
BOWDISH, Mrs., B. S., Demarest, N. J.....1902
BOWDITCH, HAROLD, Jamaica Plain, Boston, Mass.....1900
BOWLES, JOHN HOOPER, 401 S. G. St., Tacoma, Wash.....1891
BOWMAN, Mrs. H. H., 41 Mulberry St., Springfield, Mass.....1905
BRACKEN, Mrs. HENRY MARTYN, 1010 Fourth St., S. E., Minneapolis, Minn.....1897
BRADFORD, Mrs. J. L., Morris Building, New Orleans, La.....1897
BRADFORD, MOSES B. L., Concord Public Library, Concord, Mass...1889
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.....1902
BRANDRETH, COURTENAY, Cliff Cottage, Ossining, N. Y.....1905
BRANDRETH, FRANKLIN, Cliff Cottage, Ossining, N. Y.....1889
BRENNAN, CHARLES F., Mount Carmel, Ill.....1902
BREWSTER, EDWARD EVERETT, 316 East C. St., Iron Mountain, Mich.1893
BRIDGE, Mrs. EDMUND E., 52 Wyman St., West Medford, Mass.....1902
BRIGHT, Miss ANNA L., Green Hill Farm, Overbrook, Pa.....1903
BRIMLEY, H. H., Raleigh, N. C.....1904
BROCK, Dr. HENRY HERBERT, 687 Congress St., Portland, Me.....1894
BROOKS, ALLAN, Okanagan Landing, B. C.....1902
BROOKS, Rev. EARLE AMOS, Waverly, W. Va.....1892
BROOKS, CLARENCE MORRISON, 105 West St., Keene, N. H.....1900
BROWN, EDWARD J., Lemon City, Florida.....1891
BROWN, HUBERT H., 100 Gothic Ave., Toronto Junction, Ontario...1889
BROWN, LEWIS BOYER, 29 Admiral Road, Toronto, Ontario.....1904
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.1895
BROWNSON, W. H., Superintendent of Schools, Portland, Me.....1903
BRYANT, OWEN, Cohasset, Mass.....1903
BUCK, HENRY ROBINSON, Box 213, Hartford, Conn.....1897
BUFFUM, M. C., 28 Greenough Place, Newport, R. I.....1905
BUMPUS, Dr. HERMON C., Am. Mus. Natural History, New York City.1901
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.....1898
BURKE, WM. BARDWELL, 130 Spring St., Rochester, N. Y.....1901
BURNETT, WILLIAM L., 128 N. Sherwood St., Fort Collins, Colo.....1895
BURNEY, THOMAS L., 83 New Park St., Lynn, Mass.....1905
BURTCH, VERDI, Branchport, N. Y.....1903
BURTIS, HENRY MOTT, Babylon, N. Y.....1897
BUTLER, Miss CHARLOTTE W., 75 Cabot St., Beverly, Mass.....1904

BUXBAUM, Mrs. CLARA E., St. Joseph, Mich.....1895
CABOT, LOUIS, Brookline, Mass.....1904
CADY, Mrs. JOHN H., 127 Power St., Providence, R. I.....1905
CALLENDER, JAMES PHILLIPS, 603 Springfield Ave., Summit, N. J...1903
CAMERON, E. S., V. Ranch, Terry, Montana.....1903
CAMPBELL, Mrs. ROBERT, 280 Wildwood Ave., Jackson, Mich.....1905
CARLETON, CYRUS, 69 Vinton St., Providence, R. I.....1903
CARPENTER, Rev. CHARLES KNAPP, Polo, Ill.....1894
CARR, RUFUS H., 160 Pearl St., Brockton, Mass.....1904
CARROLL, J. M., 714 Speight St., Waco, Tex.....1905
CASE, Rev. BERT F., Middle Haddam, Conn.....1903
CASE, CLIFFORD M., 100 Ashley St., Hartford, Conn.....1892
CASH, HARRY A., 166 S. Angell St., Providence, R. I.....1898
CATLIN, JAMES P., Ottawa, Ill.....1905
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.....1885
CHAPIN, Prof. ANGIE CLARA, 25 Freeman Cottage, Wellesley, Mass..1896
CHAPMAN, Dr. E. A., 107 E. 23rd. St., New York City.....1905
CHASE, Mrs. AGNES, 116 Florida Ave., N. W., Washington, D. C...1896
CHASE, SIDNEY, Nantucket, Mass.....1904
CHILDS, JOHN LEWIS, Floral Park, N. Y.....1900
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....1901
CHUBB, SAMUEL H., Amer. Mus. Nat. Hist., New York City.....1894
CLAPP, Miss Martha G. B., 163 East St., Pittsfield, Mass.....1903
CLARK, EDWARD B., 341 Oak St., Chicago, Ill.....1900
CLARK, Miss EMILY L., 103 Main St., St. Johnsburg, Vt.....1905
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....1895
CLARK, Miss SUSAN E., 103 Main St., St. Johnsburg, Vt.....1905
CLARKE, Dr. CHARLES K., Toronto Asylum, Toronto, Ont.....1902
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.....1896
CLEVELAND, Dr. CLEMENT, 59 W. 38th St., New York City.....1903
COALE, HENRY K., Highland Park, Ill.....1883
COFFIN, Miss LUCY V. BAXTER, 3232 Groveland Ave., Chicago, Ill...1905
COGGINS, HERBERT LEONARD, 5025 McKean Ave., Germantown, Philadelphia, Pa.....1898
COLBURN, ALBERT E., 1204 S. Main St., Los Angeles, Cal.....1891
COLSON, HAROLD ROY, 15 Walker St., Cambridge, Mass.....1904
COLVIN, WALTER S., Osawatomie, Kan.....1896
COMEAU, NAPOLEON A., Godbout, Quebec.....1885
COMEY, ARTHUR C., 54 Concord Ave., Cambridge, Mass.....1901
COMMONS, Mrs. F. W., 2437 Park Ave., Minneapolis, Minn.....1902
CONANT, Mrs. THOS. O., 243 W. 98th St., New York City.....1901
CONGDON, JAMES W., 202 S. 9th St., La Crosse, Wis.....1902
COOK, Miss LILIAN GILLETTE, 165 W. 82d St., New York City.....1899
COOLIDGE, PHILIP TRIPP, United States Forest Service, Washington, D. C.....1902
COPE, ALBAN, Butler Hospital, Providence, R. I.....1885

COPE, FRANCIS R., Jr., E. Washington Lane, Germantown, Pa....1892
COPELAND, Dr. ERNEST, 302 Goldsmith Building, Milwaukee, Wis..1897
COPELAND, MANTON, 40 Winthrop St., Taunton, Mass.....1900
COX, ULYSSES O., 433 Washington Ave., Terre Haute, Ind.....1894
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....1893
CRANDALL, C. W., 10 Third St., Woodside, N. Y.....1891
CRANE, Miss CLARA L., Dalton, Mass.....1904
CRANE, Mrs. ZENAS, Dalton, Mass.....1904
CROLIUS, Miss ANNE A., 815 Carnegie Hall, New York City.....1897
CROMWELL, JAMES W., Box 246, Summit, N. J.....1904
CRONE, JOHN VALETINE, Greeley, Colo.....1902
CROSBY, MAUNSELL S., Rhinebeck, N. Y.....1904
CUMMINGS, Miss EMMA G., Kennard Road, Brookline, Mass.....1903
CURRIE, JOHN D., 143 Oliver Ave., N., Minneapolis, Minn.....1902
CURRIE, ROLLA P., Dept. of Agriculture, Washington, D. C.....1895
CURRIER, EDMONDE SAMUEL, St. Johns, Ore.....1894
DANIEL, JOHN W., Jr., Lynchburg Va.....1895
DART, Dr. LESLIE O., 1603 4th Ave., S., Minneapolis, Minn.....1898
DAVENPORT, Mrs. ELIZABETH B., 45 Green St., Brattleboro, Vt.....1898
DAVID, F. M., Damariscotta, Me.....1905
DAVIS, Miss MARY A., 26 W. 97th St., New York City.....1898
DAVIS, STEWART, Narragansett Pier, R. I.....1899
DAVIS, WALTER R., 139 Park St., Newton, Mass.....1900
DAVISON, DONALD B., 204 Prospect Terrace, Davenport, Iowa.....1901
DAY, CHESTER SESSIONS, 280 Newbury St., Boston, Mass.....1897
DAY, FRANK MILES, Mt. Airy, Philadelphia, Pa.....1901
DEAN, R. H., U. S. Weather Bureau, St. Louis, Mo.....1893
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....1899
DEARBORN, NED, Field Columbian Museum, Chicago, Ill.....1902
DE HAVEN, ISAAC NORRIS, Box 61, Ardmore, Pa.....1893
DE LUCE, PERCIVAL, 114 E. 23rd. St., New York City.....1904
DERBY, RICHARD, 101 Park Ave., New York City.....1898
DERICKSON, S. H., Lebanon Valley College, Annville, Pa.....1904
DE VINE, J. L., 5478 Ellis Ave., Chicago, Ill.....1903
DEWEY, Dr. CHARLES A., 53 S. Fitzhugh St., Rochester, N. Y.....1900
DICKEY, SAMUEL S., 31 S. West St., Waynesburg, Pa.....1905
DIKE, ARCHIE C., Bristol, Vt.....1903
DILLE, FREDERICK M., 2927 W. 28th Ave., Denver, Colo.....1892
DIONNE, C. E., Laval Univ., Quebec.....1893
DIXON, FREDERICK J., Elm Ave., Hackensack, N. J.....1891
DOBBIN, WILLIAM L., 43 Beverley St., Rochester, N. Y.....1902
DODGE, CHARLES W., Univ. of Rochester, Rochester, N. Y.....1900
DODGE, FRED CLINTON, 125 Milk St., Boston, Mass.....1897
DODGE, JULIAN M., Wenham Depot, Mass.....1903
DOOLITTLE, E. A., Box 34, Painesville, Ohio.....1905
DOUBLEDAY, Mrs. FRANK NELSON, 111 E. 16th St., New York City .1897

DOUGHERTY, Gen. WILLIAM E., 1409 E. 14th St., Fruitvale, Cal.....1890
DOUGLAS, HENRY L., 55 Appleton St., Brockton, Mass.....1905
DREW, Miss EMMA E., 82 Grant St., Burlington, Vt.....1904
DROWNE, Dr. FREDERICK PEABODY, Warren, R. I.....1899
DRUMMOND, Miss MARY, 208 West St., Wheaton, Ill.....1904
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DUGMORE, ARTHUR RADCLYFFE, Newfoundland, N. J.....1899
DULL, Mrs. A. P. L., 211 N. Front St., Harrisburg, Pa.....1900
DURFEE, OWEN, Box 125, Fall River, Mass.....1887
DYCHE, Prof. L. L., Lawrence, Kansas.....1886
DYKE, ARTHUR CURTIS, Bridgewater, Mass.....1902
EASTMAN, HARRY D., Framingham, Mass.....1891
EATON, ELON HOWARD, 259 Park Ave., Rochester, N. Y.....1895
EDDY, NEWELL, A., 615 N. Grant Place, Bay City, Mich.....1885
EDSON, JOHN M., 2210 Victor St., Bellingham, Wash.....1886
EHINGER, Dr. CLYDE E., 15 Normal Ave., West Chester, Pa.....1904
EICHE, AUGUST, 1133 O St., Lincoln, Neb.....1902
EIFRIG, Rev. C. W. GUSTAVE, 210 Wilbrod St., Ottawa, Ont.....1901
ELLS, GEORGE P., Norwalk, Conn.....1904
ELROD, Prof. MORTON J., Univ. of Montana, Missoula, Montana....1892
ELY, Mrs. THEODORE N., Bryn Mawr, Pa.....1901
EMBODY, GEORGE CHARLES, 78 Seymour St., Auburn, N. Y.....1898
EMLEN, ARTHUR COPE, Awbury, Germantown, Philadelphia, Pa....1896
EMMET, ROBERT T., New Rochelle, N. Y.....1904
EMMET, W. L. R., 48 Worthington Ave., Schenectady, N. Y.....1905
EMORY, Mrs. MARY DILLE, 156 Foundry St., Morgantown, W. Va...1899
ENDERS, JOHN O., Box 546, Hartford, Conn.....1904
ERICSON, LAWRENCE, 155 Rogers Ave., Brooklyn, N. Y.....1901
EUSTIS, RICHARD S., 11 Wadsworth House, Cambridge, Mass.....1903
EVANS, ERNEST MERWYN, Awbury, Germantown, Philadelphia, Pa..1897
EVANS, WILLIAM B., 205 E. Central Ave., Moorestown, N. J.....1897
EVERETT, WILLIAM M., 200 W. 99th St., New York City.....1902
FAIR, PAUL J., 567 Lincoln Ave., Palo Alto, Cal.....1904
FARLEY, JOHN A., 105 Summer St., Malden, Mass.....1904
FARR, MARCUS S., Princeton University, Princeton, N. J.....1900
FARWELL, Mrs. FRANCIS COOLEY, Edgewood, Lake Forest, Ill.....1898
FARWELL, Mrs. JOHN V., Jr., Edgewood, Lake Forest, Ill.....1896
FAULKS, EMORY N., 22 Madison Ave., Madison, N. J.....1902
FELGER, ALVA HOWARD, North Side High School, Denver, Colo....1898
FELL, Miss EMMA TREGO, Holicong, Pa.....1903
FERRY, JOHN FARWELL, 384 Bissell St., Chicago, Ill.....1894
FIELD, EDWARD, The Belvidere, W. Bancroft St., Toledo, Ohio.....1898
FINLEY, WILLIAM L., 264 Madison St., Portland, Ore.....1904
FINNEY, Mrs. WILLIAM W., Churchville, Md.....1900
FISHER, Miss ELIZABETH WILSON, 1502 Pine St., Philadelphia, Pa..1896
FISHER, WILLIAM H., 1318 Bolton St., Baltimore, Md.....1895

FISHER, WILLIAM HUBBELL, 13 Wiggins Block, Cincinnati, Ohio...1883
FLANAGAN, JOHN H., 392 Benefit St., Providence, R. I.....1898
FLETCHER, Mrs. MARY E., Proctorsville, Vt.....1898
FOOTE, Miss F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.....1897
FORBES, HENRY S., Milton, Mass.....1904
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....1901
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....1883
FRASER, DONALD, Johnstown, N. Y.....1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....1903
FRENCH, CHARLES H., Canton, Mass.....1904
FULLER, CHARLES ANTHONY, Summit Road, Brookline, Mass.....1894
FULLER, T. OTIS, Needham, Mass.....1904
GALLUP, ASA H., 65 James St., Ottawa, Ontario.....1905
GAMMELL, IVES, 170 Hope St., Providence, R. I.....1903
GANO, Miss LAURA, 310 Huestis St., Ithaca, N. Y.....1903
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.....1903
GATES, GEORGE B., Madison, S. D.....1904
GATH, JOHN, Box 236 Torrington, Conn.....1901
GAUT, JAMES H., 182 E. Walnut St., Pasadena, Cal.....1899
GIBSON, LANGDON, 18 Washington Ave., Schenectady, N. Y.....1904
GIFFORD, EDWARD WINSLOW, Acad. of Sciences, San Francisco, Cal. 1904
GLEASON, Rev. HERBERT W., 83 Pinckney St., Boston, Mass.....1894
GODDARD, F. N., 33 E. 50th St., New York City.....1901
GOODALE, Dr. JOSEPH LINCOLN, 397 Beacon St., Boston, Mass.....1885
GOODRICH, JULIET T., 10 Astor St., Chicago, Ill.....1904
GOODWIN, Miss AMELIA M., 10 Follen St., Cambridge, Mass.....1904
GOSS, Mrs. ALETTA W., 5475 Ridgewood Court, Chicago, Ill.....1902
GOULD, JOSEPH E., Norfolk & Southern Railway Co., Berkley, Va.....1889
GRANGER, Miss HELEN, Pierce Hall, Cambridge, Mass.....1904
GRANGER, WALTER W., Am. Mus. Nat. Hist., New York City.....1891
GRAVES, Mrs. CHARLES B., 66 Franklin St., New London, Conn.....1905
GREENE, EARLE R., 470 Jackson St., Atlanta, Ga.....1905
GREENOUGH, Mrs. AMELIA P., 377 Beacon St., Boston, Mass.....1904
GREENOUGH, HENRY VOSE, 45 Carlton St., Brookline, Mass.....1901
GRIFFING, MOSES BOWDITCH, Shelter Island Heights, N. Y.....1897
GRIFFITHS, BARTRAM W., 4024 Green St., Philadelphia, Pa.....1902
HALES, HENRY, Ridgewood, N. J.....1890
HALL, H. PORTER, Leominster, Mass.....1904
HAMFELDT, A., The Ware Times, Ware, Ia.....1892
HAMILTON, CAMPBELL T., 216 77th St., Brooklyn, N. Y.....1905
HAMLIN, GEORGE L., R. F. D. 9, Fairfield, Conn.....1893
HANKINSON, THOMAS LEROY, Charleston, Ill.....1897
HANN, HERBERT H., 700 Springfield Ave., Summit, N. J.....1903
HARDON, Mrs. HENRY W., 315 West 71st St., New York City.....1905

HARDY, JOHN H., Jr., 24 Irving St., Arlington, Mass.....1905
HARRIMAN, Miss CORNELIA, Arden, New York City.....1899
HARRIMAN, Miss MARY, 1 E. 55th St., New York City.....1899
HARTLEY, INNESS, 314 W. 86th St., New York City.....1901
HARVEY, Miss RUTH SAWYER, Bond Hill, Cincinnati, Ohio.....1902
HASKELL, Miss HELEN P., 1207 Henry St., Alton, Ill.....1905
HATHAWAY, HARRY S., Box 498, Providence, R. I.....1897
HAVEMEYER, H. O., Jr., Mahwah, N. J.....1893
HAZARD, Hon. R. G., Peace Dale, R. I.....1885
HEAD, Miss ANNA, 2538 Channing Way, Berkeley, Cal.....1903
HEERMANCE, EDGAR THORNTON, 364 Palisade Ave., Yonkers, N. Y..1903
HELME, ARTHUR H., Miller Place, N. Y.....1888
HEMPHILL, ASHTON E., Holyoke, Mass.....1905
HENDERSON, Judge JUNIUS, Boulder, Colo.....1903
HENDRICKSON, W. F., 130 12th St., Long Island City, N. Y.....1885
HENNINGER, Rev. WALTHER F., 206 Jefferson St., Tiffin, Ohio.....1898
HERRICK, HAROLD, 46 Cedar St., New York City.....1905
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.....1900
HILL, A. C., 400 Pleasant St., Belmont, Mass.....1905
HILL, ELIZABETH, Sewall, Groton, Mass.....1904
HILL, JAMES HAYNES, Box 485, New London, Conn.....1897
HILL, Mrs. THOMAS R., 4613 Wayne Ave., Germantown, Pa.....1903
HINDSHAW, HENRY HAVELOCK, N. Y. State Museum, Albany, N. Y.1897
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio....1899
HINE, Mrs. JANE L., Sedan, Ind.....1890
HINTON, Miss SUSAN McV., 41 W. 32d St., New York City.....1900
HITCHCOCK, FRANK H., 658 Chestnut St., Waban, Mass.....1891
HIX, GEORGE E., 630 Columbus Ave., New York City.....1904
HODGE, Prof. CLIFTON FREMONT, Clark Univ., Worcester, Mass.....1899
HOLBROOK, Miss ISABEL B., Rhode Island Normal School, Providence, R. I.....1905
HOLDEN, Mrs. EMELINE R., 13 E. 79th St., New York City.....1902
HOLDEN, Mrs. EDWIN B., 323 Riverside Drive, New York City.....1903
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Aves., Pittsburgh, Pa.1899
HOLLISTER, NED, Biological Survey Dept. of Agriculture, Washington, D. C.....1894
HOLLISTER, WARREN D., Continental Oil Co., Denver, Colo.....1901
HOOKER, Mrs. CHARLES PARKER, 67 Chestnut St., Springfield, Mass.1903
HORSFALL, BRUCE, 38 Moore St., Princeton, N. J.....1905
HORSHERT, HERMAN, 3851a Juniata St., St. Louis, Mo.....1904
HOWARD, J. STANLEY, Box 52, Silver Lake Assembly, N. Y.....1904
HOWARD, OZORA WILLIAM, Box 1177 Los Angeles, Cal.....1898
HOWE, CARLTON D., Essex Junction, Vt.....1901
HOWE, REGINALD HEBER, Jr., Longwood, Brookline, Mass.....1895
HOWLAND, RANDOLPH H., 130 Grove St., Montclair, N. J.....1903
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....1891

HUBEL, FREDERICK C., 112 Alexandrine Ave., W., Detroit, Mich....1903
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J....1895
HUNT, CHRESWELL J., 1306 N. 53rd St., West Philadelphia, Pa.....1902
HUNTER, W. D., Box 208, Dallas, Texas.....1899
INGALLS, CHARLES E., East Templeton, Mass.....1885
INGERSOLL, ALBERT M., 818 5th St., San Diego, Cal.....1885
IRVING, JOHN, 550 Park Av., New York City.....1894
ISHAM, C. B., 30 E. 63d St., New York City.....1891
JACKSON, THOMAS H., 343 E. Biddle St., West Chester, Pa.....1888
JAGER, H. J., 222 State Ave., Owatonna, Minn.....1904
JANNEY, NATHANIEL E., 112 Drexel Bldg., Philadelphia, Pa.....1899
JENKINS, HUBERT OLIVER, Stanford University, Cal.....1902
JENNEY, CHARLES F., 35 Congress St., Boston, Mass.....1905
JOHNSON, EVERETT EDWIN, R. F. D. 1, Box 46, Hebron, Me.....1896
JOHNSON, FRANK EDGAR, 16 Amackassin Terrace, Yonkers, N. Y....1888
JOHNSON, JAMES HOWARD, Bradford, N. H.....1894
JOHNSON, WALTER ADAMS, 133 E. 16th St., New York City.....1898
JOHNSON, WILLIAM S., Boonville, N. Y.....1893
JORDAN, A. H. B., Everett, Wash.....1888
JUDD, ELMER T., Cando, N. D.....1895
KAY, JOHN WILBUR, 62 Selden Ave., Detroit, Mich.....1904
KAY, WALLACE G., 62 Selden Ave., Detroit, Mich.....1904
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....1899
KEIM, THOMAS DANIEL, 405 Radcliffe St., Bristol, Pa.....1902
KELKER, WILLIAM A., Box 114, Harrisburg, Pa.....1896
KELLOGG, Prof. VERNON L., Stanford University, Cal.....1888
KENDALL, Miss BLANCHE, 20 Dudley St., Brookline, Mass.....1904
KENDALL, Dr. WILLIAM C., U. S. Bureau of Fisheries, Washington, D. C.....1886
KENNARD, FREDERIC HEDGE, Brookline, Mass.....1892
KENT, GEORGE H., Suffolk, Miss.....1905
KERMODE, FRANCIS, Curator Provincial Museum, Victoria, B. C....1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.....1904
KEYSER, Rev. LEANDER S., 108 W. Third St., Canal Dover, Ohio....1891
KING, GEORGE GORDON, 16 E. 84 St., New York City.....1888
KING, LE ROY, 20 E. 84th St., New York City.....1901
KIRKHAM, Mrs. JAMES W., 275 Maple St., Springfield, Mass.....1904
KIRKWOOD, FRANK C., Ocean City, Md.....1892
KLUGH, A. B., Wellington Field Nat. Club, Guelph, Ont.....1904
KNAPP, Mrs. HENRY A., 301 Quincy Ave., Scranton, Pa.....1905
KNETSCH, ROBERT, Fort Worth, Tex.....1898
KNIGHT, ORA WILLIS, 84 Forest Ave., Bangor, Me.....1893
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.1897
KOCH, Prof. AUGUST, Williamsport, Pa.....1891
KOPMAN, HENRY HAZLITT, Ellisville, Miss.....1899
KUTCHEN, Dr. VICTOR, Dartford, Wis.....1905

LACEY, HOWARD GEORGE, Kerrville, Texas.....1899
LANGE, D., Central High School, St. Paul, Minn.....1904
LANTZ, Prof. DAVID ERNEST, Dept. of Agriculture, Washington, D. C.1885
LARKIN, HARRY H., 237 North St., Buffalo, N. Y.....1903
LARRABEE, AUSTIN P., 232 W. First North St., Salt Lake City, Utah.1902
LATIMER, Miss CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y.....1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa...1902
LECHASSEUR, A., Trois-Pistoles, Quebec.....1905
LEE, Prof. LESLIE ALEXANDER, 3 Bath St., Brunswick, Me.....1903
LEGGE, LOUIS E., 22 Dow St., Portland, Me.....1905
LEUTLOFF, HERMAN C. A., 666 E. 135th St., New York City.....1896
LEVERING, THOMAS HENRY, 1627 Newton St., Washington, D. C...1898
LEVERSON, Dr. MONTAGUE R., Miller's Hotel, 39 W. 26th St., New York City.....1901
LIBBY, ORIN GRANT, Grand Forks, N. Dakota.....1900
LINCOLN, ALBERT L., Walnut Place, Brookline, Mass.....1904
LINTON, Miss MARY J., 163 East St., Pittsfield, Mass.....1903
LIVERMORE, JOHN R., Forest View Farm, Katonah, N. Y.....1904
LLOYD, ANDREW JAMES, 334 Bay State Road, Boston, Mass.....1900
LOOMIS, JOHN A., Mereta, Texas.....1887
LORD, Rev. WILLIAM R., Rockland, Mass.....1901
LORING, J. ALDEN, Owego, New York.....1889
LOWE, WILLOUGHBY P., Okehampton, Devon, England.....1893
LUM, EDWARD H., Chatham, N. J.....1904
LYMAN, Miss EMILY R., 121 N. 18th St., Philadelphia, Pa.....1903
MACDOUGALL, GEORGE R., 131 W. 73rd St., New York City.....1890
MACLAY, MARK W., Jr., 13 W. 31st St., New York City.....1905
MADDOCK, Miss EMELINE, The Belgravia, Philadelphia, Pa.....1897
MAHER, J. E., Windsor Locks, Conn.....1902
MAITLAND, ROBERT L., 45 Broadway, New York City.....1889
MANN, JAMES R., Arlington Heights, Mass.....1903
MARCH, Prof. JOHN LEWIS, Union College, Schenectady, N. Y.....1903
MARRS, Mrs. KINGSMILL, Prouts Neck, Me.....1903
MARSDEN, H. W., Witch Creek, Cal.....1904
MARSH, DANIEL J., Five cent Saving Bank, Springfield, Mass.....1894
MARTIN, Miss MARIA ROSS, Box 365, New Brunswick, N. J.....1902
MASTERMAN, ELMER ELLSWORTH, R. F. D. 2 New London, Ohio....1895
MCATEE, WALDO LEE, Dept. of Agriculture, Washington, D. C.....1903
MCCLINTOCK, NORMAN, Amberson Ave., Pittsburgh, Pa.....1900
MCCONNELL, HARRY B., Box 77, Cadiz, O.....1904
MCCOOK, PHILIP JAMES, 15 William St., New York City.....1895
MCELHONE, Miss NELL K., 377 West End Ave., New York City.....1905
MCEWEN, DANIEL C., 160 Stirling Pl., Brooklyn, N. Y.....1901
MCHATTON, Dr. HENRY, Macon, Ga.....1898
MCILHENNY, EDWARD AVERY, Avery Island, La.....1894
MCKECHNIE, FREDERICK BRIDGHAM, Ponkapog, Mass.....1900

McLAIN, ROBERT BAIRD, Market and 12th Sts,, Wheeling, W. Va. . . 1893
McMILLAN, Mrs. GILBERT, Gorham, N. H. 1902
McNEIL, Miss EMILY, Cromwell Hall, Cromwell, Conn. 1905
McNULTY, HENRY A., 281 Fourth Ave., N. Y. City. 1900
MEAD, Mrs. E. M., 2465 Broadway, New York City. 1904
MEEKER, JESSE C. A., Box 163 Danbury, Conn. 1899
MERRIAM, HENRY F., 94 New England Ave., Summit, N. J. 1905
MERRILL, HARRY, Bangor, Maine. 1883
MERSHON, W. B., Saginaw, Mich. 1905
MILLER, JAMES HENRY, Lowville, N. Y. 1904
MILLER, WALDRON DE WITT, 309 E. 7th St., Plainfield, N. J. 1896
MILLS, HARRY C., Box 218, Unionville, Conn. 1897
MILLS, Prof. WILLIAM C., Ohio State Univ., Columbus, O. 1900
MITCHELL, Mrs. MINA BAKER, Care of Plow Co., Chattanooga, Tenn. . 1898
MITCHELL, Dr. WALTON I., 202 Levy Bldg., Galveston, Tex. 1893
MONTGOMERY, THOMAS H., Jr., Univ. of Texas, Austin, Texas. 1899
MOORE, Miss ELIZ. PUTNAM, 70 West 11th St., New York City. 1905
MOORE, ROBERT THOMAS, W. Main St., Haddonfield, N. J. 1898
MORCOM, G. FREAN, 726 Lake St., Los Angeles, Cal. 1886
MORGAN, ALBERT, 125 Trumbull St., Hartford, Conn. 1903
MORTON, Dr. HOWARD McILVAIN, 400 Andrus Bldg., Minneapolis, Minn. 1900
MOSHER, FRANKLIN H., Wakefield, Mass. 1905
MOSLE, Mrs. GEORGE R., 301 West End Ave., New York City. 1904
MUMMERY, EDWARD G., 24 E. Atwater St., Detroit, Mich. 1902
MUNRO, JAMES A., 26 Wellington St., W., Toronto, Ont. 1904
MURPHY, Dr. EUGENE E., 444 Telfair St., Augusta, Ga. 1903
MURPHY, ROBERT C., Mt. Sinai, Long Island, N. Y. 1905
MYERS, Miss LUCY F., "Brookside," Poughkeepsie, N. Y. 1898
NASH, HERMAN W., Box 264, Pueblo, Colo. 1892
NELSON, JAMES ALLEN, 317 E. Buffalo St., Ithaca, N. Y. 1898
NEWMAN, Rev. STEPHEN M., 1818 M. St., N. W., Washington, D. C. . 1898
NICHOLS, JOHN M., 46 Spruce St., Portland, Me. 1890
NICHOLS, JOHN TREADWELL, 42 W. 11th St., New York City. 1901
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan. 1903
NORRIS, J. PARKER, Jr., 723 Walnut St., Philadelphia, Pa. 1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind. 1904
NOWELL, JOHN ROWLAND, Box 979, Schenectady, N. Y. 1897
NOYES, Mrs. HARRY A., Hyde Park, Vt. 1905
O'CONNOR, HALDEMAN, 25 N. Front St., Harrisburg, Pa. 1896
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis. . . . 1897
OLDYS, HENRY, Dept. of Agriculture, Washington, D. C. 1896
OLIVER, DANIEL LEET, 701 Ridge Ave., Allegheny, Pa. 1902
OLIVER, Dr. HENRY KEMBLE, 2 Newbury St., Boston, Mass. 1900
ORMSBEE, Miss CARRIE W., Brandon, Vt. 1904
OSGOOD, HENRY W., Pittsfield, N. H. 1901

Osgyani, A., 367 Union Ave., Bridgeport, Conn....1904
Owen, Miss Juliette Amelia, 306 N. 9th St., St. Joseph, Mo....1897
Paddock, Miss Isabel M., Fairbank's Museum, St. Johnsbury, Vt. 1904
Paine, Augustus G., Jr., 126 E. 39th St., New York City....1886
Palmer, Samuel Copeland, Swarthmore, Pa....1899
Parke, Louis T., 4039 Spruce St., Philadelphia, Pa....1903
Parker, Hon. Herbert, S. Lancaster, Mass....1904
Patten, Mrs. John D. H., 2212 R St., N. W., Washington, D. C....1900
Peabody, Rev. P. B., Blue Rapids, Kans....1903
Peavey, Robert W., 791 Coney Island Ave., Brooklyn, N. Y....1903
Peck, Clark J., 6728 Leeds St., W. Philadelphia, Pa....1904
Peck, Henry O., 62 Pomeroy Ave., Pittsfield, Mass....1904
Perry, Dr. Elton, 110 Baylor St., Austin, Tex....1902
Perry, George P., Sterling, Ill....1905
Peters, James Lee, Walnut Ave., Jamaica Plain, Mass....1904
Peterson, Cyrus A., 8 Shaw Place, St. Louis, Mo....1904
Pettis, Miss Grace L., Museum Nat. Hist., Springfield, Mass....1903
Phelps, Mrs. J. W., Box 36, Northfield, Mass....1899
Phillips, Alexander H., Princeton, N. J....1891
Phillips, John Charles, 299 Berkeley St., Boston, Mass....1904
Phillips, Sherman E., Canterbury, N. H....1904
Pierce, A. K., Renovo, Pa....1891
Poe, Miss Margaretta, 1500 Park Ave., Baltimore, Md....1899
Pomeroy, Harry Kirkland, Box 575, Kalamazoo, Mich....1894
Poole, Alfred D., 401 W. 7th St., Wilmington, Delaware....1901
Porter, Louis H., Stamford, Conn....1893
Praeger, William E., Dept. Botany, Univ. Chicago, Chicago, Ill. 1892
Procter, James N., R. F. D. 2, Ventura, Cal....1904
Purdy, James B., Plymouth, Mich....1893
Radcliffe, Mrs. Wallace, 1200 K St., N. W., Washington, D. C....1905
Rann, Mrs. Mary L., Manchester, Iowa....1893
Raub, Dr. M. W., 340 W. King St., Lancaster, Pa....1890
Rawson, Calvin Luther, Box 33, Norwich, Conn....1885
Read, Albert M., 1140 15th St. N. W., Washington, D. C....1895
Reagh, Dr. Arthur Lincoln, 39 Maple St., West Roxbury, Mass....1896
Redfield, Miss Elisa Whitney, 29 Everett St., Cambridge, Mass....1897
Redington, Alfred Poett, Box 66, Santa Barbara, Cal....1890
Reed, Chester A., 75 Thomas St., Worcester, Mass....1904
Reed, Miss Emily E., 12 Louisburg Sq., Boston, Mass....1904
Reed, Hugh Daniel, 804 E. Seneca St., Ithaca, N. Y....1900
Reed, Mrs. William Howell, Belmont, Mass....1904
Rehn, James A. G., Acad. Nat. Sciences, Philadelphia, Pa....1901
Remick, J. A., Jr., 300 Marlboro St., Boston, Mass....1905
Reynolds, George H., 357 Maple St., Springfield, Mass....1904
Rhoads, Charles J., Bryn Mawr, Pa....1895
Ribyn, Albert L., 118 N. 8th St., St. Charles, Mo....1903

RICHARD, WILLIAM, Cody, Wyoming....1904
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass...1900
RICHARDS, JOHN BION, 75 Worth St., New York City....1888
RICHARDSON, C. H., Jr., 435 S. El Molino Ave., Pasadena, Cal....1903
RICHARDSON, Miss HARRIET, 1864 Wyoming Ave., Washington, D.C..1905
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass....1896
RIDGWAY, JOHN L., Chevy Chase, Md....1890
RIKER, CLARENCE B., 48 Vesey St., New York City....1885
RITCHIE, SANFORD, Dover, Me....1900
ROBBINS, REGINALD C., 373 Washington St., Boston, Mass....1901
ROBERTS, WILLIAM ELY, George School, Bucks Co., Pa....1902
ROBINSON, ANTHONY W., 409 Chestnut St., Philadelphia, Pa....1903
RODDY, Prof. H. JUSTIN, State Normal School, Millersville, Pa....1891
ROGERS, CHARLES H., 109 Patton Hall, Princeton, N. J....1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y....1896
ROOSEVELT, THEODORE, Jr., White House, Washington, D. C....1902
ROSS, GEORGE H., 23 West St., Rutland, Vt....1904
ROWLEY JOHN JR., 505 Everett Ave., Palo Alto, Cal....1889
SABINE, GEORGE K., 30 Irving St., Brookline, Mass....1903
SAGE, HENRY M., Menands Road, Albany, N. Y....1885
SAMPSON, WALTER BEHRNARD, 36 S. California St., Stockton, Cal...1897
SAND, ISABELLA LOW, Ardsley-on-Hudson, N. Y....1902
SANDS, AUSTIN LEDYARD, Greenough Place, Newport, R. I....1902
SANFORD, HARRISON, 65 W. 50th St., New York City....1905
SANFORD, Dr. LEONARD C., 216 Crown St., New Haven, Conn....1902
SARGENT, HARRY CLEVELAND, 430 Centre St., Newton, Mass....1905
SAVAGE, WALTER GILES, Monteer, Mo....1898
SCHMITT, Dr. JOSEPH, Anticosti Island, Quebec....1901
SCHMUCKER, Dr. S. C., 610 S. High St., West Chester, Pa....1903
SCHUTZE, ADOLPH E., 2306 Guadalupe St., Austin, Texas....1903
SCHWARZ, FRANK, 1520 Lafayette Ave., St. Louis, Mo....1904
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa...1898
SEVERSON, HENRY P., Winneconne, Wis....1902
SHATTUCK, EDWIN HAROLD, Granby, Conn....1898
SHAW, HOLTON A., 610 4th Ave., Grand Forks, N. Dakota....1898
SHEARER, AMON R., Mont Belvieu, Tex....1905
SHEIBLEY, S. B., Dept. of Justice, Washington, D. C....1903
SHELDON, CHARLES, 515 Madison Ave., New York City....1905
SHOEMAKER, FRANK H., Care of Gen. Auditor U. P. R. R. Co., Omaha, Neb....1895
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis....1899
SILLIMAN, HARPER, 562 5th Ave., New York City....1902
SMITH, CHARLES PIPER, Stanford University, Cal....1898
SMITH, Rev. FRANCIS CURTIS, Boonville, N. Y....1903
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo....1888
SMITH, Dr. HUGH M., 1209 M St. N. W., Washington, D. C....1886
SMITH, LOUIS IRVIN, Jr., 3809 Chestnut St., Philadelphia, Pa....1901

SMITH, PHILO W., JR., Mona House, St. Louis, Mo 1903
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va 1892
SNOW, Prof. FRANCIS H., Univ. of Kansas, Lawrence, Kan 1903
SNYDER, WATSON, 701 Broad St., Newark, N. J 1905
SNYDER, WILL EDWIN, 109 E. Mackie St., Beaver Dam, Wis 1895
SPAULDING, FRED B., Lancaster, N. H 1894
SPINNEY, HERBERT L., Seguin Light Station, Popham Beach, Me 1900
STANTON, Prof. J. Y., 410 Main St., Lewiston, Me 1883
STAPLETON, RICHARD P., 235 High St., Holyoke, Mass 1904
STEBBINS, Miss FANNIE A., 480 Union St., Springfield, Mass 1903
STEPHENSON, Mrs. LOUISE McGOWN, Helena, Ark 1894
STILLMAN, WILLIAM M., 426 W. 7th St., Plainfield, N. J 1904
STOCKARD, CHARLES RUPERT, 519 W. 123d St., New York City 1904
STONE, CLARENCE F., Branchport, N. Y 1903
STONE, DWIGHT D., R. F. D. 3, Oswego, N. Y 1891
STROUT, CHARLES S., 207 Alfred St., Biddeford, Me 1904
STURGIS, Mrs. F. L., 3 W. 36th St., New York City 1904
STURTEVANT, EDWARD, St. George School, Newport, R. I 1896
STYER, Mrs. KATHARINE R., Concordville, Pa 1903
SURFACE, Prof. HARVEY ADAM, State Zoölogist, Harrisburg, Pa 1897
SWAIM, LORING T., 190 Brattle St., Cambridge, Mass 1905
SWAIN, JOHN MERTON, 10 Bush St., Skowhegan, Me 1899
SWALES, BRADSHAW HALL, 145 Gladstone Ave., Detroit, Mich 1902
SWARTH, HARRY S., 356 Belden Ave., Chicago, Ill 1900
SWENK, MYRON H., 1821 O St., Lincoln, Neb 1904
SWEZEY, GEORGE, 61 Polk St., Newark, N. J 1901
TAVERNER, PERCY A., 165 Oakland Ave., Detroit, Mich 1902
TAYLOR, ALEXANDER O'DRISCOLL, 132 Bellevue Ave., Newport, R. I. 1888
TEST, Dr. FREDERICK CLEVELAND, 4401 Indiana Ave., Chicago, Ill. 1892
THACHER, Mrs. THOMAS W., 21 Dwight St., Brookline, Mass 1904
THOMAS, Miss EMILY HINDS, The Aldine Hotel, Chestnut St. Philadelphia, Pa 1901
THOMPSON, Miss CAROLINE BURLING., Wellesley College, Wellesley, Mass 1900
THOMPSON, Dr. M. T., Clark University, Worcester, Mass 1904
THOMPSON, ROY, Cando, N. D 1905
TOPPAN, GEORGE L., 18 E. 23d St., New York City 1886
TOWNSEND, WILMOT, 3d Ave. and 75th St., Brooklyn, N. Y 1894
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa 1899
TUDBURY, WARREN C., 47 W. 126th St., New York City 1903
TUFTS, LE ROY MELVILLE, "Thrushwood," Farmington, Me 1903
TURNER, HOWARD M., 28 Grays Hall, Cambridge, Mass 1903
TUTTLE, Dr. CARL, Berlin Heights, Ohio 1890
TWEEDY, EDGAR, 336 Main St., Danbury, Conn 1902
UNDERWOOD, WILLIAM LYMAN, Mass. Inst. Technology, Boston, Mass 1900

VALENTINE, Miss ANNA J., Bellefonte, Pa.....1905
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....1885
VAN HUYCK, JOHN MASON, Lee, Mass.....1904
VAN NAME, WILLARD GIBBS, 121 High St., New Haven, Conn.....1900
VAN NORDEN, WARNER MONTAGNIE, Jay Mansion, Harrison, New York.....1899
VAN SANT, Miss ELIZABETH, 2960 Dewey Ave., Omaha, Neb.....1896
VARICK, Mrs. WILLIAM REMSEN, 1015 Chestnut St., Manchester, N. H.1900
VETTER, Dr. CHARLES, 152 Second St., New York City.....1898
VISHER, STEPHEN S., Forestburg, S. Dakota.....1904
WALES, EDWARD H., Hyde Park, N. Y.....1896
WALKER, Dr. R. L., 355 Main Ave., Carnegie, Pa.....1888
WALLACE, Miss LOUISE BAIRD, Mt. Holyoke College, South Hadley, Mass.....1903
WALLINGSFORD, LEO, 118 S. Black St., Alexandria, Ind.....1904
WALTER, HERBERT E., Cold Spring Harbor, Long Island, N. Y.....1901
WALTERS, FRANK, 7 W. 103d St., New York City.....1902
WARREN, Dr. B. H., Box 245, West Chester, Pa.....1885
WARREN, EDWARD ROYAL, 20 W. Caramillo St., Colorado Springs, Colo.....1902
WATSON, Miss SARAH R., 5128 Wayne St., Germantown, Philadelphia, Pa.....1900
WAYNE, ARTHUR T., Mt. Pleasant, S. C.....1905
WEIR, J. ALDEN, Brandville, Conn.....1899
WELLS, FRANK S., 916 Grant Ave., Plainfield, N. J.....1902
WENTWORTH, IRVING H., Matehuala, E. de S. L. P., Mexico.....1900
WESSEL, LOUIS, Railway Mail Service, Butte, Mont.....1905
WEST, JAMES A., 33 John St., Champaign, Ill.....1896
WEST, LEWIS H., Roslyn, N. Y.....1887
WESTFELDT, GUSTAF REINHOLD, Box 601, New Orleans, La.....1902
WETMORE, Mrs. EDMUND, 343 Lexington Ave., New York City.....1902
WHEELER, EDMUND JACOB, 177 Pequot Ave., New London, Conn...1898
WHEELER, JOHN B., East Templeton, Mass.....1897
WHEELOCK, Mrs. IRENE G., 1040 Hinman Ave., Evanston, Ill.....1902
WHITCOMB, Mrs. HENRY F., 721 Franklin St., Milwaukee, Wis.....1897
WHITE, FRANCIS BEACH, 6 Phillips Place, Cambridge, Mass.....1891
WHITE, GEORGE R., P. O. Dept., Ottawa, Ont.....1903
WHITE, W. A., 130 Water St., New York City.....1902
WICKERSHAM, CORNELIUS W., 22 Apley Court, Cambridge, Mass....1902
WICKS, M. L., Jr., 128 I. W. Hellman Block, 2nd St. and Broadway, Los Angeles, Cal.....1890
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....1895
WILCOX, Dr. EMMA D., 307 W. 98th St., New York City.....1905
WILCOX, T. FERDINAND, 115 W. 75th St., New York City.....1895
WILDE, MARK L. C., 315 N. 5th St., Camden, N. J.....1893
WILLIAMS, J. BICKERTON, 24 Ann St., Toronto, Ontario.....1889

WILLIAMS, RICHARD FERDINAND, Box 521, New York City.....1902
WILLIAMS, ROBERT S., New York Botanical Gardens, Bronx Park, New York City.....1888
WILLIAMS, ROBERT W., Jr., U. S. Dept. of Agriculture, Washington, D. C.....1900
WILLIAMSON, E. B., Bluffton, Ind.....1900
WILSON, SIDNEY S., German Amer. Bank Bldg., St. Joseph, Mo.....1895
WINSLETT, Miss MARY E., Stevensville, Mont.....1904
WISLER, J. JAY, 231 Cherry St., Columbia, Pa.....1903
WISTER, WILLIAM ROTCH, 505 Chestnut St., Philadelphia, Pa.....1904
WOLFE, WILLIAM EDWARD, Box 7, Wray, Colo.....1900
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C....1895
WOOD, NORMAN A., 1216 S. University Ave., Ann Arbor, Mich.....1904
WOOD, S. T., 229 Beverley St., Toronto, Ont.....1904
WOODCOCK, ARTHUR ROY, Corvallis, Oregon.....1901
WOODRUFF, EDWARD SEYMOUR, 14 E. 68th St., New York City.....1899
WOODRUFF, FRANK M., Acad. Sciences, Chicago, Ill.....1904
WOODRUFF, LEWIS B., 14 E. 68th St., New York City.....1886
WOODWORTH, Mrs. NELLY HART, 41 Bank St., St. Albans, Vt.....1894
WORTHEN, CHARLES K., Warsaw, Ill.....1891
WORTHINGTON, WILLIS W., Fernandina, Fla.....1889
WRIGHT, HORACE WINSLOW, 82 Myrtle St., Boston, Mass.....1902
WRIGHT, SAMUEL, Conshohocken, Pa.....1895
WYCKOFF, Miss FLORENCE A., 113 E. Chemung Pl., Elmira, N. Y.....1905
ZAPPEY, WALTER R., 19 Norfolk St., Roslindale, Mass.....1905
ZERRAHN, CARL OTTO, Milton, Mass.....1904

DECEASED MEMBERS.

FELLOWS.

	Date of Death.
BAIRD, SPENCER FULLERTON	Aug. 19, 1887
BENDIRE, CHARLES E.	Feb. 4, 1897
COUES, ELLIOTT	Dec. 25, 1899
GOSS, N. S	March 10, 1891
HOLDER, JOSEPH B	Feb. 28, 1888
JEFFRIES, JOHN AMORY	March 26, 1892
MCILWRAITH, THOMAS	Jan. 31, 1903
MERRILL, JAMES C	Oct. 27, 1902
SENNETT, GEORGE BURRITT	March 18, 1900
TRUMBULL, GURDON	Dec. 28, 1903
WHEATON, JOHN M	Jan. 28, 1887

Honorary Fellows.

Burmeister, Hermann May 1, 1892
Cabanis, Jean Feb. 20, 1906
Gätke, Heinrich Jan. 1, 1897
Gundlach, Juan March 14, 1896
Gurney, John Henry April 20, 1890
Hartlaub, Gustav Nov. 20, 1900
Huxley, Thomas H June 29, 1895
Kraus, Ferdinand Sept. 15, 1890
Lawrence, George N Jan. 17, 1895
Milne-Edwards, Alphonse April 21, 1900
Parker, William Kitchen July 3, 1890
Pelzeln, August von Sept. 2, 1891
Salvin, Osbert June 1, 1898
Schlegel, Hermann Jan. 17, 1884
Seebohm, Henry Nov. 26, 1895
Taczanowski, Ladislas Jan. 17, 1890

Corresponding Fellows.

Altum, C. A Jan. 1, 1900
Anderson, John Aug. 16, 1900
Baldamus, Eduard Oct. 30, 1893
Blakiston, Thomas W Oct. 15, 1891
Bogdanow, Modest N March 4, 1888
Bryant, Walter, E May 21, 1905
Cooper, James G July 19, 1902
Cordeaux, John Aug. 1, 1899
David, Armand Nov. 10, 1900
Fatio, Victor March 19, 1906
Haast, Julius von Aug. 15, 1887
Hargitt, Edward March 19, 1895
Holub, Emil Feb. 21, 1902
Homeyer, E. F. von May 31, 1889
Layard, Edgar Leopold Jan. 1, 1900
Leverkühn, Paul Dec. 5, 1905
Lyttleton, Thomas, Lord Lilford June 17, 1896
Marschall, A. F Oct. 11, 1887
Malmgren, Anders Johan April 12, 1897
Middendorff, Alexander Theodore von Jan. 28, 1894
Mojsisovics, F. G. Hermann August Aug. 27, 1897

OUSTALET, EMILE.....Oct. 23, 1905
PHILIPPI, R. A.....Aug. — 1904
PREJEVALSKI, N. M.....Oct. 20, 1887
PRENTISS, D. WEBSTER.....Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....Feb. 17, 1888
RADDE, GUSTAV FERDINAND.....—— 1903
SCHRENCK, LEOPOLD VON.....Jan. 20, 1894
SÉLEYS-LONGSCHAMPS, EDMOND DE.....Dec. 11, 1900
SEVERTZOW, N.....Feb. 8, 1885
STEVENSON, HENRY.....Aug. 18, 1888
TRISTRAM, H. B.....March 8, 1906
WHARTON, HENRY T.....Sept. —, 1895
WOODHOUSE, SAMUEL W.....Oct. 23, 1904

MEMBERS.

FANNIN, JOHN.....June 20, 1904
JUDD, DR. SYLVESTER D.....Oct. 22, 1905

ASSOCIATES.

ADAMS, CHARLES F.....May 20, 1893
ALLEN, CHARLES SLOVER.....Oct. 15, 1893
ATKINS, H. A.....May 19, 1885
AVERY, WILLIAM CUSHMAN.....March 11, 1894
BAILEY, CHARLES E.....——, 1905
BARLOW, CHESTER.....Nov. 6, 1902
BAUR, GEORGE.....June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....June 8, 1888
BILL, CHARLES.....April —, 1897
BIRTWELL, FRANCIS JOSEPH.....June 29, 1901
BOARDMAN, GEORGE A.....Jan. 11, 1901
BOLLES, FRANK.....Jan. 10, 1894
BRACKETT, FOSTER H.....Jan. 5, 1900
BREESE, WILLIAM L.....Dec. 7, 1889
BRENINGER, GEORGE FRANK.....Dec. 3, 1905
BROKAW, L. W.....Sept. 3, 1897
BROWN, JOHN CLIFFORD.....Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....Jan. 9, 1900
BURNETT, LEONARD E.....March 16, 1904
CAIRNS, JOHN S.....June 10, 1895

CALL, AUBREY BRENDON.....Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....April —, 1897
CANFIELD, J. B.....Feb. 18, 1904
CARTER, EDWIN.....—— 1900
CLARK, JOHN N.....Jan. 13, 1903
COLBURN, W. W.....Oct. 17, 1899
COLLETT, ALONSO M.....Aug. 22, 1902
CORNING, ERASTUS, Jr.....April 9, 1893
COE, W. W.....April 26, 1885
DAFFIN, WM. H.....April 21, 1902
DAKIN, JOHN A.....Feb. 21, 1900
DEXTER, NEWTON.....July 27, 1901
ELLIOTT, S. LOWELL.....Feb. 11, 1889
FAIRBANKS, FRANKLIN.....April 24, 1895
FOWLER, J. L.....July 11, 1899
GESNER, A. H.....April 30, 1895
GOSS, BENJAMIN F.....July 6, 1893
HATCH, JESSE MAURICE.....May 1, 1898
HOADLEY, FREDERIC H.....Feb. 26, 1895
HOLMES, LARUE KLINGLE.....May 10, 1906
HOOPES, JOSIAH.....Jan. 16, 1904
HOWLAND, JOHN SNOWDON.....Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON.....Oct. 2, 1898
JENKS, JOHN W. P.....Sept. 27, 1894
JESURUN, MORTIMER.....March —, 1905
JOUY, PIERRE LOUIS.....March 22, 1894
KNIGHT, WILBUR CLINTON.....July 8, 1903
KNOX, JOHN C.....July 9, 1904
KNOX, JOHN COWING.....June 1, 1904
KUMLIEN, LUDWIG.....Dec. 4, 1902
KUMLIEN, THURE.....Aug. 5, 1888
LAWRENCE, ROBERT HOE.....April 27, 1897
LINDEN, CHARLES.....Feb. 3, 1888
MABBETT, GIDEON.....Aug. 15, 1900
MARBLE, CHARLES C.....Sept. 25, 1900
MARCY, OLIVER.....March 19, 1899
MARIS, WILLARD LORRAINE.....Dec. 11, 1895
MCKINLAY, JAMES.....Nov. 1, 1899
MEAD, GEORGE S.....June 19, 1901
MINOT, HENRY DAVIS.....Nov. 13, 1890
MORRELL, CLARENCE HENRY.....July 15, 1902
NICHOLS, HOWARD GARDNER.....June 23, 1896
NIMS, LEE.....March 12, 1903
NORTHROP, JOHN I.....June 26, 1891
PARK, AUSTIN F.....Sept. 22, 1893
PAULMIER, FREDERICK CLARK.....March 3, 1906

POMEROY, Miss GRACE V.....May 14, 1906
RAGSDALE, GEORGE H.....March 25, 1895
READY, GEORGE H.....March 20, 1903
RICHARDSON, JENNESS.....June 24, 1893
ROBINS, Mrs. EDWARD.....July 2, 1906
SELOUS, PERCY SHERBORN.....April 7, 1900
SLATER, JAMES H.....Feb. —, 1895
SLEVIN, THOMAS EDWARDS.....Dec. 23, 1902
SMALL, EDGAR A.....April 24, 1884
SMITH, CLARENCE ALBERT.....May 6, 1896
SOUTHWICK, JAMES M.....June 3, 1904
STOWE, W. H.....March —, 1895
THORNE, PLATTE M.....March 16, 1897
THURBER, E. C.....Sept. 6, 1896
VENNOR, HENRY G.....June 8, 1884
WATERS, EDWARD STANLEY.....Dec. 26, 1902
WILLARD, SAMUEL WILLIS.....May 24, 1887
WOOD, WILLIAM.....Aug. 9, 1885
YOUNG, CURTIS C.....July 30, 1902



LARUS KUMLIENI BREWSTER.

UPPER FIGURE, JUVENAL; LOWER FIGURE, ADULT.

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LIST OF THE BIRDS OF LOUISIANA.

BY GEO. E. BEYER, ANDREW ALLISON, AND HENRY H. KOPMAN.

PART I.— PRELIMINARY SKETCH.

THE most striking feature of the well known topographical and corresponding biotic variety in Louisiana is the absolute contrast between the biota of the fertile and extended delta plain of the Mississippi in the southeastern part of the State and the biota of every type of Louisiana country to the west and north and northwest, except the remaining portion of the general flood plain of the Mississippi lying within the borders of Louisiana.

In the keenness of this distinction should be founded every attempt to understand the distribution of avian as well as all other life in this decidedly remarkable State; for since the low southeastern section referred to as the delta plain touches almost every other topographic type in Louisiana, great value is given to a study of life along the line of divergence between the extreme lowland in the southeast and all the slightly or much more elevated country of different soil conformations of Louisiana. The ecological problems here involved are scarcely to be paralleled elsewhere.

A view of the Louisiana avifauna might properly be focused in the southeastern part of the State merely in recognition of the uncommon difference between bird life as found in that section and as found in all other parts of the United States. The immense and, in some ways, peculiar development of aquatic bird life in southeast Louisiana especially, and a lesser, but corre-

sponding, development of bird life representing the higher orders, make this the peculiarly characteristic region of the State. This is the section to which has attached all bird-lore preëminently



MAP OF LOUISIANA.

Louisianian: it was chiefly through the exploitation of this region that Audubon brought the State of his birth so prominently before the ornithological world.

On account of the general, as well as the purely scientific interest involved, therefore, the ornithology of Louisiana offers its greatest and most attractive problems in a study of the correlative dispersal of species between this section and the remaining regions of the State.

Before considering in a general way the various types of country in Louisiana, we will take up several of the factors that make the southeast delta plain unlike all the other regions. The silt of the Mississippi deposited over its flood plain bears no evergreen conifers, and in such soil the entire coniferous tribe is unrepresented except for one species, the bald cypress (*Taxodium distichum*). The tree-growth of the delta plain is a most unusual development of deciduous trees unbroken by native evergreen arboreal growths except the live oak and the partially evergreen water oaks. In addition to these and the cypress, the predominant species of trees are red maple, ash, willow, tupelo (*Nyssa uniflora*), and box elder (*Negundo*) in the wetter situations; elms (*Ulmus americana* and *U. fulva*) nearly everywhere; Texas red oak in rich wet woods, and in drier localities with hackberry, honey-locust, cottonwood, sweet gum, and sycamore. Several species of haw, dogwood, and holly are found in considerable abundance. The lesser shrub growth is uninteresting, and contains but one evergreen, the wax myrtle. Over a large part of the area, the button-bush (*Cephalanthus*) is the most conspicuous shrub. It will be noticed that magnolia, *as a native*, is entirely absent from this region. In fact, the tree flora, if considered from the standpoint of separate species, is by no means peculiar or attractive. The tupelo, the cypress, and the live and water oaks are the only trees in any degree characteristic. The distinction of the extreme lowlands is the conspicuousness of certain familiar trees on higher ground, to the exclusion of many others equally characteristic of more elevated regions. In fact, the country under consideration exhibits a decided floral paucity except among certain of the cryptogamous orders. There is less peculiarity in the floral units than in the exuberance of certain growths, and in the manner of their distribution, combination, and adaptation.

The topographical peculiarity of this territory is the extent of its water-broken coast. The breadth of its marshes, the various

ramification of its sluggish bayous, and the impenetrability of its cypress fastnesses need hardly be reiterated wherever the literature of the time is known. In the particularly water-broken territory in the region of the lower Mississippi, however, there are features worth notice from a distributional standpoint. The region under immediate consideration lies between the 89th and 92nd degrees of west longitude and between the 29th degree of north latitude and a line following rather closely the northern shores of Lakes Pontchartrain and Maurepas, westward to about New Iberia, in central southern Louisiana. Such a line gives about the extreme southern breeding limit of the Baltimore Oriole, the Yellow-throated Vireo, and the Yellow Warbler. Continued still farther westward, to Lake Charles, in southwest Louisiana, this line in its full extent will give about the beginning of the rise to the highlands of the State, which are pronounced at such points as Covington, Baton Rouge, and Opelousas. New Orleans, on the other hand, is in the very heart of the typical low alluvial plain.

The marshes of southeast Louisiana extend in from the coast for varying distances, according to the conformation of the 'lakes,' and the courses of the streams. Whether the 'lakes' are salt or fresh depends, of course, upon the distance from the sea, and the volume of the streams with whose outflow they come into contact. The 'lakes' are merely the remains of former marginal bays, and, at present, the streams not only flow into them, but, in a majority of cases, flow out of them again. Lake Pontchartrain, though landlocked except for several small outlet channels, is comparatively salt. Some of those now a considerable distance inland, on the other hand, exhibit no salinity whatever. Just as between the fresh 'lakes' and the salt 'lakes,' no sharp line can be drawn, so between the latter and the ordinary inlets and bays of the Gulf, no exact distinction can be made. The consequent variability of the character of the marsh is readily appreciated.

It will be seen also that this variability is important in determining the comparative abundance of water birds in different localities of a region which casual inspection might pronounce uniform. As the seasons change, and with them the nature of avian requirements, certain species in this region show varying choices of localities. Moreover, different individuals of the same species appear

in the State in various rôles according to the season, and consequently their dispersion throughout this region will show much variation. These remarks apply especially to the Terns, the Herons, and the Rails, and to such semi-aquatic species among the higher orders as the Red-winged Blackbird and the Seaside Sparrow.

A feature of the immediate delta and southeast coast region of interest is the presence of hundreds of islands, some purely marshy, some more or less sandy, a few formed chiefly of shells, and still others formed entirely from the muddy deposits of the Mississippi, according, in each case, to the relative influence exerted by the building operations of the sea and by those of the river. The character of these islands is of great importance in studying the distribution of the terns on the coast, and is a subject that has scarcely been touched yet from a careful ecological standpoint.

The chief shrubby and arboreal growth of these islands is wax myrtle and dwarfed live oaks. The fishermen of the region often speak of 'mangrove,' but they use the word as a generic term. Prof. S. M. Tracy, expert of the U. S. Department of Agriculture and resident on the Gulf Coast, tells us that he has never found the mangrove on the islands about the mouth of the Mississippi, and that he doubts exceedingly its occurrence so far north.

In the main body of the marsh — what, in fact, might be called mainland — the occurrence of thickets and 'islands' of wax myrtle and small live oaks is characteristic. The more important growth, along some of the streams and about the borders of the 'lakes,' is chiefly cypress; these cypress brakes are outrunners of the swamps further inland.

At the latitude of New Orleans, except for the little marshy corner of the State on the east, and one or two similar small regions to the west, the continuity of the swamp *woodland* is practically unbroken, except for the water surfaces. Here again, however, there are small but important distinctions to be made. Owing to the continual elevation of the flood plain of the Mississippi, districts along the bank of the river have been raised entirely above the level of standing swamp water, while water from overflow has been made the rare exception by the levee system. Consequently, there is a considerable amount of comparatively dry woodland in

the parishes bordering the Mississippi in southeast Louisiana, and its bird life is appreciably different from that of the typical cypress and tupelo swamp.

The alternation of these two very mobile types of woodland with one another, and with the less important marshes, gives another highly interesting set of problems in distribution. With the gradual elevation of the country, such species as the Bob-white, the Florida Blue Jay, the Southern Meadowlark, and the Towhee, are gradually acquiring a wider coastwise dispersion. Some spots in this region, though probably not more than eight or ten feet above sea-level, have positively a slight upland cast in the appearance of their woodland, and the effect of this difference upon bird life cannot be better appreciated than during the migrations, when transient life will be largely attracted to such spots.

The peculiarity of the delta plain region is attested in a variety of ways. By virtue of its latitude, Louisiana might be expected to attract a considerable number of tropical birds in summer. As a matter of fact, however, it does not. But the few tropical birds occurring in the State in the warmer months seem restricted to the delta plain region.

To just what extent the avifauna of southeast Louisiana partakes of a tropical nature is shown by the occurrence and status of the following species: The Booby is a rather rare summer visitor to the water-broken region of the southeast; the Scarlet Ibis appears at exceedingly rare intervals; the White-winged Dove has been found in limited numbers on the coast islands; the Mangrove Cuckoo is alleged to occur there; while the Ani (*Crotophaga ani*) and the Groove-billed Ani (*Crotophaga sulcirostris*) are both very rare.

Another measure of the peculiarity of this region, as well as of its tropical affiliation, is the coastwise wintering of species mostly extra-limital at that season. But the winter conditions in even the southernmost part of Louisiana are not what would be expected of a region popularly estimated as subtropical. The margin of difference between fact and assumption in this matter may be gauged with some accuracy by the following data: The White-eyed Vireo and the Blue-gray Gnatcatcher winter casually in this section; the Tree Swallow winters irregularly, but sometimes

abundantly; while the Barn Swallow is supposed to winter along the coast in small numbers. Other species present very rarely in winter but apparently not by accident, will be considered in this connection in the systematic annotation.

The coast winter is usually sufficiently mild to attract a large number of the Limicolæ. Of the nearly forty species of this order so far recorded from Louisiana, fully half are represented by wintering individuals. Some of these individuals belong to resident species, as the Willet, the Killdeer, and the Wilson's Plover, while others represent species for the most part transient, such as the Dowitcher and the Semipalmated Plover.

The effect of winter on the Herodiones is much more pronounced than in the case of the Limicolæ. The reason is apparent; the congeniality of their summer habitat is affected not only by the mere fact of lower temperatures, but also by the practical defoliation of these abodes; for most vegetation is truly dormant, for a short period, in even the Louisiana coast winter. Consequently, a large part of the marsh and swamp habitats of the herons is rendered unfit for their resort; and as their feeding grounds lie among such places rather than on the beaches and mudflats, as in the case of a majority of the Limicolæ, their numbers in winter are greatly reduced. In fact, the Louisiana, Little Blue, Snowy, and Green Herons, the Reddish Egret, and apparently the Yellow-crowned Night Heron, are entirely absent in winter, while the numbers of all other species, except the American Bittern, essentially a winter visitor, are much diminished.

There appears to be no time in the Louisiana winter when all individuals of the several species of ducks occurring regularly in the State have been driven from the coast. Even the more southern wintering species, such as the Pintail, and even the Blue-winged Teal and others that pass far into the tropics, are usually represented in southern Louisiana to a considerable extent throughout the winter.

As for the other extreme of winter bird life in southern Louisiana, that of species driven south by occasional blizzards reaching to the Gulf Coast, it is not particularly striking. Such species as the Scoters, the Long-tailed Duck, and the Snow Bunting have been brought this far south on several occasions; but with the

exception of a slight increase of species already represented in the wintering bird life of the southern section, there is usually no great interest attached to these periods of unseasonable weather, which generally come about the middle of February. Even in deciduous southern forests, there is commonly considerable shelter, thus obviating the necessity of great movement of winter species when the blizzards strike far south.

To return to a more specific consideration of the elements that make southeast Louisiana unique in its avifauna, we find that possibly the most important of these is the absence of certain species very familiar in other regions. The Chipping Sparrow, for instance, has never, to our knowledge, been found in the fertile alluvial plain, while other common species, such as the Bluebird, have very circumscribed breeding areas within the region, and are general in distribution only in winter. Even at that season they are rarely common. The Bluebird, however, is apparently becoming better established, and recently we have found it at New Orleans in the nesting season. The Kingbird is decidedly uncommon in the region more closely adjacent to New Orleans, and appears in regular numbers only in the pine woods to the east, in Mississippi, in the pine flats and hills to the north, in Louisiana, and on towards the prairies in southwest Louisiana. About the same conditions prevail with regard to the Nighthawk and the Cowbird, and, less conspicuously, in the case of the Southern Meadowlark. Another peculiarity is the absence of all Nuthatches in southeastern lowland Louisiana.

The positive peculiarities of this region of the State are the abundance of Orchard Orioles and the abundance of wet woodland warbler life. Hooded and Prothonotary Warblers are astonishingly plentiful, and so is the Parula Warbler in certain localities, especially the neighborhood of New Orleans. The fondness of Swainson's Warbler for the growths of 'switch cane'(*Arundinaria tecta*) bring it to this section of the State as well as to the river bottoms in higher areas. But the distribution of this warbler is distinctly local in the former region. In fact, we have found it only near New Orleans, and we have not secured proof of its breeding there. The Sycamore Warbler, of course, is representative of this region, and especially of the lake and bayou cypress swamps.

The Kentucky Warbler is common in moist level woodland throughout the region. Other characteristic species are the Yellow-billed Cuckoo, the Green-crested Flycatcher, the White-eyed Vireo, and the Yellow-breasted Chat. The characteristic breeding finches are the Cardinal and the Painted Bunting. No other breeding finches, except the Towhee and the Indigo Bunting, in comparatively small numbers, are recorded for this section, though the Dickcissel is a hypothetical breeder in this area, and is always found in summer to the very eastern edge of the prairie region on the west.

A species whose range in Louisiana might almost be said to define the area under consideration is the Florida Grackle.

Catbirds and Thrashers are absent in summer, as, indeed, from most of the State. The normal abundance of Crested Flycatchers, Wood Pewees, Summer Tanagers, and Red-eyed Vireos, however, and the presence of the Wood Thrush as a breeder in much smaller numbers than these species, make it still more difficult to discover the exact set of characters to which should be attributed some of the deficiencies in summer.

In migration, the country is stamped somewhat peculiar through the practical absence of the northern breeding and extralimital wintering *Dendroicæ* and most of the other northern breeding Mniotiltidæ, except, of course, the Myrtle Warbler. The usual inconspicuousness of this class of warblers, however, is more or less characteristic of all the adjoining regions in both Louisiana and Mississippi, and, in fact, almost throughout the coastal plain of the Gulf States.

Even the more southern breeding warblers, such as the Black-and-white, Worm-eating, Yellow, and Redstart, are uncommon migrants throughout this Louisiana area in spring. In fall, the conditions are not so unusual. Notable exceptions in fall to the conditions found in spring are the more southern breeding warblers, and two of the more northern breeding, the Magnolia and the Tennessee. The last two are among the commonest migrants in October.

In winter, the conditions approach more nearly to what would be considered normal somewhat to the north. The principal exception to this statement is afforded in the small variety of win-

tering sparrows, which are practically limited to an abundance of Swamp, White-throated, and Savanna Sparrows. The Song Sparrow is practically unknown in this region. As has been stated already, the Chipping Sparrow does not occur at any season. White-crowned and Fox Sparrows are decidedly rare, and Vesper and Field Sparrows are about equally uncommon. The Myrtle Warbler, on the other hand, is remarkably abundant in winter. The Orange-crowned Warbler is often abundant in mid-winter, but never, of course, to the same degree as the Myrtle Warbler. The Pine Warbler invades this area from the pine regions. The Blue-headed Vireo is a characteristic, though not particularly common, mid-winter bird. The Purple Finch is seen chiefly in winters when there has been unusually severe weather, this species being somewhat of an exception to the statement made previously in this connection. The Junco, however, rarely reaches to the lowland. There is nothing especially peculiar in the winter distribution of Kinglets, Hermit Thrushes and Robins; Brown Creepers are more apt to be found in the pine region.

Several special topographical developments in the flood plain of the Mississippi may properly be treated with an account of the extension of the delta plain, for the lands bordering both banks of the Mississippi towards the south, and those bordering the west bank practically throughout the length of the State, display about the same characteristics in this entire distance. Of the special developments referred to, the most noticeable in the south is the formation of land outside the levees; in many cases, this land is subject partly or wholly to annual overflow. Such formation in southeast Louisiana is known as 'batture' (land that has been built by the river). Its principal tree growths are willow, cottonwood, and hackberry, with a varying amount of the other species characteristic of the drier soils of the lowland, but especially sycamore and honey-locust. These battures become perfectly dry, and, in fact, very well drained after the spring rises are past, but their moist and often partly flooded condition in spring and early summer makes them attractive to many birds. The manner of tree growth on the pure silt here deposited by the Mississippi is substantially different from that in the swamp lands away from the river. The even and somewhat open river bottom woodland

found regularly along the higher course of the Mississippi is roughly duplicated on these batture lands, whose avifauna, especially in migration, is frequently worth careful investigation.

Much of the flood-plain of the Mississippi along the northern half of its course in Louisiana is marked by very heavy swamp and a multiplicity of shallow woodland lakes, formed by cut-offs and ox-bow loops of the river. The water-bird life of the southeastern part of the State is reflected in this region.

Passing on to a broader consideration of topographical division in Louisiana, we thus have: (1) an extreme lowland coastal plain, including, as already described, the fertile delta plain of marshes and wet woodland and cypress swamp in the east, and the prairies and marshes in the west; and (2) an upland region, exhibiting successive degrees of elevation, from south to north, beginning with the slightly elevated long-leaf pine flats, and continuing through the long-leaf pine hills, and the uplands of short-leaf pine, oak, and hickory. This upland region, however, is traversed by the flood plains of the Mississippi and Red Rivers; the former extends along the eastern border of the State, the latter runs diagonally from the northwest corner and joins the Mississippi plain somewhat below the center of the State.

The transition from the river bottoms is chiefly direct in the case of Red River; along the Mississippi, however, it frequently occurs through a type of country not heretofore noticed. This further type is known as the blufflands (the cane hills of Hilgard). It is a more or less broken and elevated region, lacking extensive growths of pine, but showing a characteristic mixture of oaks, hickory, magnolia, and beech. These blufflands not only border the Mississippi flood plain, but in many instances, on the eastern side, in both Louisiana and Mississippi, extend to the river itself, so that the west shore at many points is flat and fertile alluvial, while the corresponding east shore shows precipitous banks, such as the hills upon which Baton Rouge, Natchez, and Vicksburg are situated.

The general similarity between the delta plain in southeast Louisiana and the rest of the Mississippi flood-plain lying within the State, has already been noted. The typical parts of the flood-plain throughout its length are essentially the same. Towards the north, of course, the general elevation is greater, and of interest are the

ecological differences naturally to be expected on account of the differences in altitude and latitude between the northern and southern parts of the flood-plain. But probably of more importance is the occasional occurrence of modified forms of the blufflands type of country protruding into the upper half of the alluvial plain.

The relation of the Red River bottoms to their contiguous country is by no means homologous to the case of the Mississippi River. The sharpness of distinction between the Mississippi bottoms in Louisiana and the adjoining upland country is not duplicated in the case of the Red River, although the transition in the latter case may be more direct.

Of the pine regions in Louisiana, the uplands of short-leaf pine and the long-leaf pine hills have about equal extension. The short-leaf pine uplands are confined almost entirely to the northwestern section of the State. There is a small area in the southeast, being an extension of this region as it occurs in Mississippi; in southeast Louisiana it occurs between cane hills on the west and long-leaf pine hills on the east.

The region of long-leaf pine hills occupies a large area in the central and western parts of the State, and a considerable strip in the east.

The pine forests of these upland regions are diversified, of course, by various broad-leafed growths, which are more or less confined to creek and small river bottoms. The predominant broad-leafed forms throughout the upland region of the State are beech, oak, hickory, and magnolia.

The long-leaf pine flats in Louisiana form two widely separated regions, one in the southwest and the other in the southeast.

In the southeast, this type is the most striking antithesis of the recently deposited fertile alluvial. Its peculiarity as a biotic area is more readily stated than that of the fertile alluvial, yet it is by no means so different from all other regions. It is preëminently the habitat of such resident species as the Red-cockaded Woodpecker, the Loggerhead Shrike (which never breeds in the fertile alluvial, and appears to winter there in smaller numbers than the Migrant Shrike), the Pine Warbler, the Brown-headed Nuthatch, and the Bluebird.

The most varied bird life of this region is to be found in the

heavily wooded river bottoms, in the mixed growths on the higher banks of streams, and in those diversifications of the flatter pine forests known as 'bay galls' or 'bayheads,' which are merely slight depressions, grown to the sweet bay (*Magnolia virginiana*), black gum (*Nyssa biflora*), red maple, and various shrubs peculiar to the region, such as, *Cyrilla, Illicium* (rose bay), and various ericaceous plants. One characteristic set of summer birds found in such situations, especially towards the south and in the lower growths, consists of the Wood Thrush, Parula and Hooded Warblers, White-eyed and Red-eyed Vireos, and Green-crested and Crested Flycatchers. Further north, from about the parallel of 31 degrees north, should be added the Yellow-throated Vireo, Worm-eating Warbler, and Louisiana Water-thrush.

The pine flats of the southwest merge gradually into the prairie section, which is sparingly pine-bearing almost to the coast. In scarcely any particular is this prairie region similar to the fertile alluvial region of the east. The change from its red and yellow clay soil conformation, however, to the muddy lands of the Mississippi, is very gradual, country of indeterminate nature stretches fifteen or twenty miles each side of the town of New Iberia. The most conspicuous feature of summer bird life on the prairies is the abundance of Mourning Doves, Nighthawks, Kingbirds, and Meadowlarks.

Along the coast, about the eastern edge of the prairie section, are situated the 'Five Islands,' pronounced by geologists to be without American homologues. They are hills in the marshy or prairie-land region. They have proved to be scarcely less interesting from faunistic and floristic standpoints than from a geological point of view. In their avifauna, however, they have been found less peculiar than might have been expected. The wealth of their woodland in a somewhat thinly wooded area has attracted large numbers of birds; but beyond this, no facts of particular ecological importance have been observed, except that in migration these spots attract a rather larger variety of birds than are found at corresponding times in the surrounding country.

It should be noted further of the prairie section that its river bottoms are fully as well wooded as those of any other section of the State, and along the rivers and bayous, and about the lakes

in the marshes that border it coastwise, are found swamp growths of the greatest luxuriance.

It is to the prairie section of Louisiana that are most naturally attracted western forms not found to any great extent in other regions of the State. Such is true of Sprague's Pipit, the Yellow-headed Blackbird, and the Swallow-tailed Flycatcher. Sprague's Pipit, however, is by no means unusual at New Orleans, while the Swallow-tailed Flycatcher at least is casual there. The Louisiana Tanager, which has been recorded once from the vicinity of New Orleans, and Brewer's Blackbird, which has been taken in the same region on several occasions, might both be expected to occur casually in the southwestern part of the State.

Summarized, the more important points of distribution in Louisiana give the following view:

Inland water-bird life includes chiefly the following forms: Residents — *Podilymbus*, *Larus atricilla* (may *not* breed in the interior), *Anhinga*, *Phalacrocorax mexicanus*, *Guara alba*, *Botaurus*, *Ardea*, *Nycticorax nycticorax nævius*, *Philohela*!, and *Ægialitis vocifera*; summer visitors — *Sterna antillarum*, *Ardetta*, *Herodias*, *Egretta*, *Hydranassa* (?), *Florida*, *Butorides*, *Ionornis*, *Gallinula*, and *Actitis*; winter visitors — *Pelecanus erythrorhynchos*, principal genera and species of Anatidæ, *Rallus* (except *crepitans* and *jamaicensis*), *Porzana*, *Fulica*, and *Gallinago*; transients — a large proportion of the Limicolæ.

The Falconidæ, except *Elanus*, *Ictinia*, *Buteo platypterus* (only in pinewoods towards the south), *Buteo lineatus alleni*, *Haliæetus*, and *Pandion*, are either absent from the State in summer or are chiefly confined to the upland regions at that season.

The common Strigidæ occurring in Louisiana, *Asio* excepted, are chiefly resident and generally distributed.

Coccyzus americanus occurs in all sections in summer except unbroken pine forests.

The Picidæ are generally distributed at all seasons, except *Campephilus*, which is very rare, and found in heavy forests of the central and eastern sections; *Dryobates borealis*, which is confined to pine regions; and *Sphyrapicus*, which occurs as a winter visitor. *Melanerpes erythrocephalus* is commoner in summer, and somewhat partial to piney regions.

Antrostomus carolinus, common as summer visitor in heavy growths in pine or upland regions, is rare in the low fertile alluvial of the southeast.

The distribution of the Passeres will be more readily comprehended if considered in relation to the distribution of pine and hardwood growths.

Unbroken tracts of pine forest normally attract none but the following forms: Residents — *Corvus*, *Sturnella*, *Spizella socialis*, *Peucæa*, *Lanius*, *Dendroica vigorsii*, *Sitta*, and *Sialia*; summer visitors — *Piranga rubra*; winter visitors — *Astragalinus*, *Spinus*, *Poœcetes*, *Passerculus*, *Ammodramus henslowii*! (at least in long-leaf pine flats), *Dendroica coronata*, *Dendroica palmarum* and *Merula*; transients — *Dendroica virens*.

In point of species, omitting the few important exceptions already noted, the resident, summer visitor, and winter visitor classes of bird life in the State are mainly the same in all broad-leafed growths, whether forming unbroken forests as in parts of the east and southeast, or whether occurring as diversifications of the pine regions.

In point of comparative abundance of various species, however, there are great differences to be found in the several sections, as noted earlier in this résumé.

The occurrence of transients, as shown before, is most limited in the fertile alluvial of the southeast. The extremity of this condition is found in the typical swamps of cypress, red maple, tupelo, elm, and ash. In spring, especially, such country is practically unvisited by transients, except of the few species that breed there. Where the land and the growth have both been diversified by agriculture or through other means, the passage of transients is much more noticeable in this region. Furthermore, in both spring and fall, there are a few purely transient species that are found in striking abundance.

Attention is merely called again to these interesting conditions, which cannot be thoroughly understood without study of the annotated list to follow.

(*To be continued.*)

SOME BREEDING WARBLERS OF DEMAREST, N. J.

BY B. S. BOWDISH.

THIS paper is not put forward as a complete list of all the warblers that have bred around Demarest, for such a paper must needs be the result of many seasons painstaking observation. The present paper deals with such breeding evidence as has come under the necessarily limited observation of the author during the past three seasons.

The Black and White Warbler (*Mniotilta varia*) is a regular, though not abundant, summer resident. Aside from the presence of the birds in pairs during the breeding season, the evidence of its breeding depends on the record of a nest found by Miss Christabel M. Everett in the summer of 1901, and on a pair found by Mr. Abbott and the writer, June 17 last, accompanied by young a few days out of the nest.

The Blue-winged Warbler (*Helminthophila pinus*) is a quite abundant breeder, yet so successfully are the nests concealed, and so closely does the mother bird sit, that the nests are not often found. On June 11, 1904, a nest was found among the rank grass and weeds, in a bush- and-weed-grown field, the bottom just above the ground. It was a frail structure, of fine stems and hair, and contained four young but a short time hatched. The female returned to the nest while the camera was within thirty inches of it. On May 12, of the present year, while passing a bushy point of woods jutting into a weed-grown field, I noticed a female Blue-winged Warbler with a dead oak leaf in her bill, and accompanied by her mate. After watching for a few minutes, without being able to track her to the prospective nest, I left, fearing to disturb her. I returned to the spot on the 15th and, without seeing the birds, I chanced quickly on the nest, built under a dead branch, near the base of a small cedar, and entirely covered with dead oak leaves, so laid as to leave only a mouse-like entrance. At this time no eggs had been laid, the nest seeming to be just newly finished. The first egg was laid on the 19th, and one egg added each day, the fifth and last egg being deposited May 23.

The eggs hatched June 2, the tenth day after deposition. On the 4th I found the nest empty, the leaf covering gone, and the parents crying about. A search finally discovered one young bird, still living, directly under the nest. I replaced him and he was cared for by the parents. He was still prospering on the 9th, and the nest being empty on the 14th, I hope he had so developed as to leave it of his own accord.

This mother bird, while incubating, returned to her eggs with the camera close to the nest. Operating with tube and bicycle pump, I made several exposures, and she posed quite motionless for exposures of 30 to 45 seconds, timed by watch. Young several days out of the nest were seen June 17, 1905.

The Yellow Warbler (*Dendroica æstiva*) is an abundant breeding species, arriving early in May, or even before, and departing in September. Here, as elsewhere, this bird seems partial to the bushes growing on or near the banks of streams, for nesting sites. It is exceedingly energetic, both as a larvæ destroyer and a songster.

The Chestnut-sided Warbler (*Dendroica pensylvanica*) is another of our abundant summer birds, and particularly endears itself to the observer by its devotion to nest and contents. June 4, 1904, a nest was found about two feet from the ground in a blackberry bush, at the edge of a wooded and bush-grown creek-bed. It contained four eggs, and even at the first visit, the mother bird would come on the nest while camera and operator were within two feet of it. On several subsequent occasions when I visited the nest, the bird showed the same solicitation for her charge and a growing confidence. June 5 of the present year, a nest was found, three feet up in a berry bush, in a slashing, containing four eggs. These eggs hatched June 14, and a day or two later the young disappeared. It was one of many tragic endings of attempts at housekeeping by the birds, observed this year. The female, while not as confiding as the bird of the previous year, was yet a brave little mother, and posed quite still, for exposures of fifteen seconds.

Black-throated Green Warbler (*Dendroica virens*). This is the one noteworthy record of a breeding warbler for this locality. June 5, 1904, while in a swampy piece of woods, a pair of these birds appeared much disturbed. They soon disappeared, and while still searching, I suddenly saw the female on the nest. The

situation of the nest was quite as much of a surprise as the finding of it in this locality. It was built between the stems of a 'skunk cabbage' plant, and fastened to a catbriar and the twigs of dead bush, and was about fourteen inches from the ground, in a very wet part of the swamp. It contained four eggs, which were fresh. The birds, while solicitous, did not, during our short stay, show the boldness and confidence displayed by the Chestnut-sided and Blue-winged Warblers, about their nests.

The Ovenbird (*Seiurus aurocapillus*) vies with the Yellow Warbler, in the matter of abundance, as many as three nests having been found in a single strip of woods. While allowing close approach to the nest when sitting, the bird seems exceedingly shy of a camera, and has proved one of the almost impossible subjects for photography. A set camera, well concealed, had the effect of keeping the bird from her nest until it was removed. A nest with four eggs was found June 6, 1904, built at the base of a small tree, in open woods. It was, however, destroyed before the young hatched. June 10, of the same year, two more nests were found in the same woods, one containing two eggs, the other four well fledged young. The last was under an open brush heap.

May 22 of the present year, I located a nest then building, near a path, in open woods. May 27, this nest contained three eggs, and the fourth and fifth were laid the 28th and 29th respectively. This bird incubated until the 14th of June, without results. On the latter date I found the nest destroyed. On June 18 a pair of birds was seen, accompanied by young as large as themselves.

The Northern Yellow-throat (*Geothlypis trichas brachidactyla*) appears to be quite as abundant as the Ovenbird. Swampy places where the 'skunk cabbage' grows are favorite nesting sites, the nest being often built among the stalks of this plant, though sometimes in tussocks of grass, and one nest, found this last summer, was in a tangle of dead 'joint grass,' well above the ground. All nests that I have found were in more or less wet places. For 1904 one nest with four fresh eggs was found June 2; another with four fresh eggs, June 5; and a third containing one egg, June 11. During the past summer the nest in the joint grass, previously referred to, was found June 5. It contained four fresh eggs, but was the subject of another of the summer tragedies that are so frequent, before the eggs hatched.

The Yellow-breasted Chat (*Icteria virens*) is a common breeder. Slashings and bush-grown fields, and creek-beds are the favorite sites. A nest containing three eggs was found May 29, 1904. May 24, 1905, I found a nest with four eggs, and another nest just completed. June 1 two of the eggs in the first nest were found to have hatched, the young being then several days old. On the 5th the nest was found to be empty, and the young may possibly have developed so rapidly as to have left of themselves. Another nest containing two eggs was found June 1. Two more eggs were added, and the bird was still sitting on unhatched eggs June 14. On the 19th the nest was empty and deserted.

Hooded Warbler (*Wilsonia mitrata*). Up to the present year I considered this warbler a rare breeder. June 5 a nest with four eggs was found, about one foot from the ground, in a small clump of bushes at the edge of a wood, close to a public road. June 17 and 18, Mr. Clinton G. Abbott and the writer found three pairs of birds with young out of the nest, within half a mile of the first nest. As the latter was destroyed without the eggs hatching, one cannot refrain from the impression that the birds, at least locally, must be fairly abundant breeders.

The American Redstart (*Setophaga ruticilla*) is fairly common, but only one nest has been located in the past three years. On June 3, 1904, a nest was found about ten feet from the ground, on a horizontal limb of an apple tree, beside a road, and a few feet from woods. It contained one egg. June 8 the nest was empty and deserted. A pair of birds with young, several days out of the nest, were seen June 18, of the present year.

In addition to the ten species enumerated, the Louisiana Water-Thrush (*Seiurus motacilla*) undoubtedly breeds regularly, though not abundantly, being frequently seen in pairs during the breeding season. Also there are a number of other species which it is reasonable to expect to breed here, and which I hope we may from time to time add to the list.

AUTUMN WARBLER HUNTING.

BY J. CLAIRE WOOD.

DESIRING to get some idea of the relative abundance of the late warblers and also to add a few to my collection, I spent September 25 and 28 and October 2, 1904, among them. Fourteen species, represented by 331 individuals, were met with. October 6 was the next date but I was only an hour in the woods. However, four species were noted represented by 11 birds. This was the last day I looked for them, but while woodcock hunting on October 16 I met with three Bay-breasted Warblers (*Dendroica castanea*) and three Black-polls (*D. striata*), and a Northern Yellow-throat (*Geothlypis trichas brachidactyla*) was flushed on October 23. This interested me in the question of how late any of the Mniotiltidæ could be found here. Local and other lists of about the same latitude in the transition zone were consulted but the data were meager and somewhat unsatisfactory; in fact, no careful work seems to have been done this far north after early October. It became evident that the only way to get a proper idea of relative abundance and time of departure was to investigate personally. I began August 20, 1905, and started with the intention of devoting all my spare time to warbler hunting until the day came when no more were seen. This was not carried out, for the reason that it took seven hours to locate the single specimen observed October 26, and convinced me that the prospect of meeting with a later bird was not worth the trouble. Prior to October 1 my observations were restricted to a small piece of timber on P. C. 49, but when the warblers became scarce I included a large piece of second growth on P. C. 31, both in Ecorse Township, Wayne County, Michigan.

The fascination of warbler collecting is in not knowing what you will find. Locality and conditions influence the method of hunting. Silence dominates the woods here from late August until the third week in September. Now and then you hear the dreamy note of a Wood Pewee (*Contopus virens*) and the monotonous warble of a Red-eyed Vireo (*Vireo olivaceus*), or a crow may

caw, a jay scream, or a squirrel chatter, and then comes a long interval of silence, unless your ear has become trained to detect the warblers, which are more or less abundant in every woods of reasonable size at this time of year. As a rule the earlier birds are silent as they rest and feed among the branches but utter one or several distinct peeps as they fly from twig to twig or tree to tree. They are an active and restless lot, and it is easier to get their location and direction of travel than to see them in the thick foliage. Knowing the woods well, I seldom tried to detect them in the dense foliage of beeches, maples, and similar trees, but made sure of the course they were taking and went ahead to the first tree with few leaves. There are many butternut trees in the P. C. 49 woods and no bird can pass through one of these without discovery. One of the best places was a dead ash standing between some beeches and a maple covered with a thick growth of grape vines. When passing this point about half of the birds would pause in this tree, not long enough for positive identification but giving ample time for a quick shot. It is best to keep as much as possible along the leeward side of the woods, as the wind will convey sounds from a considerable distance. I was once fifty feet to windward of a large company and only discovered them by seeing a bird. It is surprising what a long distance a warbler can be seen when not under cover. Few birds are so active, and a quick motion instantly catches the eye. In hunting certain woodland birds I have been most successful by quietly remaining an hour or more in each favorable place but this does not apply to the warblers. You must keep constantly moving, with frequent pauses to listen and look around. Every flock of chickadees or kinglets should be examined for they attract many warblers but travel too slowly and the warblers soon disappear ahead. When I first started to collect, many birds were lost by waiting for a better shot. Later I shot at the flash of a wing or a suspicious movement among the leaves, but this is not a method to be recommended, as birds not wanted are frequently secured, especially the vireos. Only one Yellow-throated Vireo (*Vireo flavifrons*) came to grief, but the Red-eyes (*V. olivaceus*) were constantly getting into trouble. They were very common during September, and the last specimens were secured October 12 and 15. The Blue-headed Vireo (*V.*

solitarius) was taken September 28 and October 5, and last seen on October 8. The Philadelphia Vireo (*V. philadelphicus*) was taken September 3, 10 and 24. They were most abundant on the 7th, when five were seen. The last Rose-breasted Grosbeak (*Zamelodia ludoviciana*) and the Whip-poor-will (*Antrostomus vociferus*) were noted on October 5, and the Yellow-billed Cuckoo (*Coccyzus americanus*) October 8; but these birds may have remained later, as I looked for nothing except warblers.

The general direction of warbler migration was west to east until about September 20; then the reverse till October 5, and due south after that date. The earlier birds were not in a hurry and preferred to follow the chain of woods, but the southward impulse seemed so strong in the late ones that they disregarded convenience and pleasure. At no time did the wind tend to check the migratory movement although, like other birds, the warblers are averse to flying with it. On such days they merely traveled low and, after leaving the woods, took short flights, while at other times they usually crossed the open country without a stop.

Yellow Warbler (*Dendroica æstiva*).— On July 16 I noted a large company of adult females and junior birds traveling through the tree tops in the heavy timber; the course they were taking was close to S. 26° W. Only adult males were seen after late July, and they became scarce about August 10.

Tennessee Warbler (*Helminthophila peregrina*).— This warbler does not take the same route every autumn, nor for that matter every spring. Not even a straggler was seen in 1904, but it was the most common species this season from August 24 to September 10, when the Black-poll took the lead to September 24, and was replaced by the Myrtle Warbler from that date on. Both the Mourning Warbler (*Geothlypis philadelphia*) and the Nashville Warbler (*Helminthophila rubricapilla*) were met with in 1904.

Black-throated Blue Warbler (*Dendroica cærulescens*).— Single birds were more often met with than of any other species, and no other exhibited an equal amount of curiosity. One actually came down from the top of a tall elm to inspect me. This species was one of the few exceptions where only adult males were noted on the day of its first appearance. The October 15 birds were of both sexes and all ages, but the two later records were adult females.

The last specimen was secured by chance or rather by a combinition of peculiar circumstances. Early in the day I had just reached a stump in the dense second growth when out popped a female Barred Owl (*Syrnium varium*) and started away, pounding the dead twigs into a spray. For hours I carefully investigated every flock of chickadees and kinglets and all likely places where solitary warblers might occur but without success. I had given up and was working out of the woods when a large flock of kinglets was heard. It required but a moment to get their direction and going ahead of them I hung the owl in a conspicuous place. It was soon surrounded by a dozen chickadees and more than a hundred Golden-crowned Kinglets (*Regulus satrapa*). Then came that chorus of ringing music, subdued and of rare sweetness, that kinglets make when surrounding an owl, and on one occasion when a Red-tailed Hawk (*Buteo borealis*) snuggled against the trunk of a thick beech in the heart of the woods during a pouring rain. While watching them the warbler appeared.

Myrtle Warbler. (*Dendroica coronata*).— Abundant September 28, and two or three hundred could be counted any day from October 1 to 15. Just how late the last of these warblers stay is not known but probably until the first heavy snow fall. The last day afield in 1904 was November 25, and twenty-five were counted — all in one flock.

Black-poll Warbler (*Dendroica striata*).— Next to the Myrtle, this was the most common species, but not in the woods. From about September 7 to October 9 this bird was seen every morning in the shade trees in the city on my way down town. As it is a great night traveler the electric lights were the probable attraction. Neither this species nor the Black-throated Green were present in such large numbers on any one day as in 1904, when about 125 of the former were noted on September 28, and 75 of the latter on October 2.

Palm Warbler (*Dendroica palmarum*).— This bird was alone and feeding in a hickory tree on high ground bordering a marsh. This is the only autumn record for the county, though it is common in spring.

Northern Yellow-throat (*Geothlypis trichas brachidactyla*).— This species may occur much later than noted by me, as I was not

1905.	August 19.	August 20.	August 24.	August 27.	Sept. 3.	Sept. 7.	Sept. 15.	Sept. 28.	Oct. 5.	Oct. 8.	Oct. 12.	Oct. 15.	Oct. 19.	Oct. 22.	Oct. 26.	Most Abundant.	No. Seen.
Black and White Warbler (*Mniotilta varia*)									2	*1		*1					
Golden-winged Warbler (*Helminthophila chrysoptera*)		*1															
Tennessee Warbler (*Helminthophila peregrina*)		*3									*3					Sept. 7	26
Western Parula Warbler (*Compsothlypis americana ramalinæ*)											*6					Oct. 12	6
Yellow Warbler (*Dendroica æstiva*)	1																
Black-throated Blue Warbler (*Dendroica cærulescens*)					*3				*8	*12	*2	*10	*1		*1	Oct. 8	12
Myrtle Warbler (*Dendroica coronata*)							1									Oct. 8	225
Magnolia Warbler (*Dendroica maculosa*)						*1			*2							Sept. 24	8
Cerulean Warbler (*Dendroica cerulea*)			*20														
Chestnut-sided Warbler (*Dendroica pennsylvanica*)					*15												
Bay-breasted Warbler (*Dendroica castanea*)					*7			*3								Sept. 3	7
Black-poll Warbler (*Dendroica striata*)					*3				3	*1			*1			Sept. 7	18
Blackburnian Warbler (*Dendroica blackburnæ*)		*1					*5									Sept. 3	28
Black-throated Green Warbler (*Dendroica virens*)				*1					*22	2	3	*3		*3		Oct. 5	22
Palm Warbler (*Dendroica palmarum*)						*1										Sept. 7	1
Ovenbird (*Seiurus aurocapillus*)									3	6	1	1					
Water-Thrush (*Seiurus noveboracensis*)					1					1							
Connecticut Warbler (*Geothlypis philadelphia*)					*3							1				Sept. 3	3
Northern Yellow-throat (*Geothlypis t. brachidactyla*)										3	*2		1				
Canadian Warbler (*Wilsonia canadensis*)		*1			5*											Sept. 3	5
American Redstart (*Setophaga ruticilla*)									*1								

in the right kind of territory. My specimens were found by beating the weeds bordering a roadway through the P. C. 49 woods.

The preceding list gives the date of the last summer residents and the number seen; also first and last date, with the number seen of the transient species, together with date of greatest abundance and the number; also everything noted after October 1 except the city Black-polls. As a bird in the hand is a positive record, beyond all possibility of dispute, a * indicates that one or more were taken on the date to which it is prefixed. I regret that the last Connecticut Warbler was not a positive record. I was resting in the thick undergrowth when the bird came directly toward me and alighted on a log not fifteen feet away. At that distance it would have been ruined for a specimen, and while I was trying to back away it took wing and disappeared.

STATUS AND PLUMAGES OF THE WHITE-WINGED GULLS OF THE GENUS *LARUS*.

BY JONATHAN DWIGHT, JR., M. D.

Plate I.

IN NEARLY all of the many species of gulls so widely distributed in both hemispheres, the primaries are black variously patterned with white or gray, but there are several species, Arctic in their distribution, which may be set apart from the others by the whiteness or pale coloration of these feathers at all stages of plumage. The best known of these is the Glaucous Gull or Burgomaster (*Larus glaucus*), the adult of which is a large bird, snowy white except for the pale pearl-gray mantle, the color running over into the primaries and fading out to white towards their apices. This species is circumpolar, but Alaskan specimens, averaging a trifle smaller, have received a name, the Point Barrow Gull (*Larus barrovianus*). Confined chiefly to the Arctic regions lying between Spitzbergen and northern Canada is a small edition of the Burgomaster,— the Iceland or White-winged Gull (*Larus leucopterus*). Less Arctic in distribution and found breeding on the Pacific coast of North America, from the United States northward, is the medium-sized Glaucous-winged Gull (*Larus glaucescens*) which in a measure forms a connecting link between the white-primaried species just mentioned and those having black primaries with white spots. The mantle of this gull is much darker than that of *glaucus*, and the primaries are slaty with terminal white spots. Kumlien's Gull (*Larus kumlieni*) originally described from a specimen taken on Cumberland Sound, and Nelson's Gull (*Larus nelsoni*), taken in Alaska near St. Michaels, appear to be a small and a large edition of the same species, the latter being nearly the size of *glaucus*, the former about that of *leucopterus*. Unlike either of the two, however, the primaries of both *kumlieni* and *nelsoni* are more or less banded terminally or edged with slaty markings. The status of both is open to some doubt, for specimens are rare. Intergradation between them seems proba-

ble, and furthermore it is possible they may prove to be the connecting links between *glaucus* and *leucopterus* on the one hand and *glaucescens* on the other, but at present there is no evidence that they represent any stage of plumage of any of these three distinct species.

The material on which I have based my conclusions has been most extensive, including not only the series in the large collections of our own country, but I have also had opportunity for examining those in the British Museum, in the Rothschild Museum at Tring, and in the museum at Berlin. In spite of this large amount of available material, some 350 specimens in all, the great lack of proper sexing has proved a serious stumblingblock, and to overcome possible errors resulting from this cause, I have confined my measurements of adults almost wholly to birds taken in the breeding season. The number of labels bearing no sex mark or one that is obviously wrong is almost incredible, and among the gulls where the plumages of the sexes are alike, and females may be recognized only by their smaller size, the question of correct sex marks is of the greatest importance. In the large series examined, I found an unusual proportion of moulting birds that have been of the greatest value in tracing out the sequence of moults and plumages, although less serviceable for measurements of wings and tails.

Relative measurements are shown on the accompanying table which has been prepared by selecting, so far as possible, adult breeding birds and young birds taken so late in the fall and winter that they would be expected to have attained their full growth. It will be observed that except for their bills the young birds closely approximate to adult dimensions, and it is a well-known fact that the tarsi and toes of young gulls very quickly attain their full growth. It is of interest that *leucopterus* averages about 16 % and the bill 33 % smaller than *glaucus*, while *barrovianus* is scarcely 3 % smaller in size and 4 % smaller in bill. Now, the individual variation in any of the species under discussion amounts to more than 7 %, and it is doubtful if any two students measuring the same birds would come within 3 % of the same result. Furthermore, in *barrovianus* the character of bill —"which has the depth through the angle never less and usually decidedly greater

MEASUREMENTS. — *Males.*

	No. of Specimens.	Wing. Aver mm.	Wing. Max. mm.	Wing. Min. mm.	Tail. Aver mm.	Tail. Max. mm.	Tail. Min. mm.	Tarsus. Aver mm.	Tarsus. Max. mm.	Tarsus. Min. mm.	Toe with Claw. Aver mm.	Toe with Claw. Max. mm.	Toe with Claw. Min. mm.	Bill, Exposed Culmen. Aver mm.	Bill, Exposed Culmen. Max. mm.	Bill, Exposed Culmen. Min. mm.	Bill, Depth at Base. Aver mm.	Bill, Depth at Base. Max. mm.	Bill, Depth at Base. Min. mm.	Bill, Depth at Angle. Aver mm.	Bill, Depth at Angle. Max. mm.	Bill, Depth at Angle. Min. mm.
L. glaucus	9 ad.	468	483	457	198	213	190	72	75	70	71	74	69	63	66	60	22	24	21	22	24	21
"	7 juv.	466			187			72			71			60			20			20		
L. barrovianus	5 ad.	458	470	444	189	197	178	71	74	69	69	72	66	61	65	56	21	22	20	21	22	20
"	3 juv.	460			189			71			69			55			19			17		
L. leucopterus	5 ad.	414	420	406	169	178	165	56	58	54	55	58	51	42	43	38	15	17	13	15	17	14
"	9 juv.	415			167			59			57			42			14			14		
L. kumlieni	3 ad.	413	417	409	170	183	170	58	58	57	58	60	57	45	46	43	16	17	15	16	17	15
"	3 juv.	411			171			60			58			46			15			16		
L. nelsoni	2 ad.	441	444	438	224	226	222	75	76	74	72	74	71	58	61	56	21	21	20	22	22	21
"	2 juv.	432			177			74			76			55			18			18		
L. glaucescens	8 ad.	431	444	417	176	180	170	70	72	66	70	74	67	57	65	53	20	21	18	20	22	19
"	3 juv.	422			174			65			67			54			18			18		
								Females.														
L. glaucus	8 ad.	441	451	432	191	206	184	69	73	66	67	72	63	58	61	56	20	21	19	20	21	19
"	4 juv.	446			189			69			67			58			19			19		
L. barrovianus	9 ad.	436	457	425	180	190	171	66	73	62	63	71	58	54	60	51	19	21	17	19	20	18
"	6 juv.	432			173			66			62			51			17			16		
L. leucopterus	4 ad.	400	403	399	161	165	152	56	59	52	53	56	52	41	42	40	14	15	14	15	15	14
"	7 juv.	394			154			57			56			41			14			14		
L. kumlieni	6 ad.	396	400	394	167	178	159	54	56	51	55	57	53	41	43	39	15	15	13	15	16	14
"	1 juv.	381			152			53			53			44			14			14		
L. nelsoni	2 ad.	409	413	406	172	173	171	64	64	63	63	65	60	51	51	52	17	17	16	17	18	16
"	none																					
L. glaucescens	5 ad.	403	419	394	169	178	165	64	68	63	63	67	59	52	55	49	18	20	17	18	20	18
"	3 juv.	397			165			64			62			50			17			17		

than through the base"— on which the species was founded proves to be mythical. It is true that the largest specimens of *barrovianus* never quite reach the dimensions of the largest *glaucus*, but overlapping of size is so considerable, even when careful comparison of sexes is made, that without first reading the labels one cannot, except in a very few cases, tell whether a bird is from Greenland or from Alaska. The variation in the size and shape of the bill in gulls is very great, and a few millimeters difference in wings that are as long as one's arm is hardly ground on which to rest a subspecies, much less a full species. In view, therefore, of these facts, I would urge the removal of *barrovianus* from the North American list, the name becoming a synonym of *glaucus*.

Measurements, while dry, are instructive, although often positively misleading when derived from very small series. My table shows that the individual variation within each species is over 7 %. It also shows that *kumlieni* is the size of *leucopterus* with a bill 6 % larger, and *nelsoni* 16 % larger than *kumlieni* with a bill 24 % larger, a species, in fact, just about the size of *glaucus*.

Before discussing the plumages of the different species it may be well to draw attention to characters that are shared in common. Adults in breeding dress are white birds with white tails and with white tips to the flight-feathers, the gray of the mantles shading into the primaries, which are lighter in *glaucus* and *leucopterus*, darker in *glaucescens*, and have slaty markings in *kumlieni* and *nelsoni;* in winter the white heads and breasts are more or less clouded with smoky gray. The bills at all seasons are bright yellow with a vermilion red spot at the angle of the lower mandible, neither the yellow nor the red losing all its color even in old dried specimens. The legs and feet are flesh colored, drying to various shades of brown and yellow. The eyelids are yellow and the irides a pale yellow. Young birds are in general appearance pale brown and white, or gray, usually with a mottled or 'watered' effect, the primaries brown or gray, often white, and with no mottling or very little of it at the apices. The bills are brownish black paling to buff at the base. The legs and feet are flesh colored. The irides are brown.

I will not attempt to outline here the intermediate stages of plumage through which each species goes. Suffice it to say that

young birds at the limited postjuvenal moult in November or later reassume some mottled feathers, likewise at the prenuptial in March, and even at the first postnuptial in August there are often many evidences of immaturity that persist throughout a second year. The adults undergo a complete postnuptial moult in August or September and a partial prenuptial moult in March or April. The details of plumage and of moult may be better discussed under the separate species, and we may now turn at once to them.

Larus glaucus. GLAUCOUS GULL.

This large circumpolar species breeds within the Arctic circle, moving southward in winter along the shores of both the Atlantic and the Pacific oceans, sometimes nearly half way to the equator. Knowledge of its plumages are derived from the material brought by Arctic expeditions and from winter specimens. I have examined an even 200 of these birds, over 50 of them from Alaska, the home of the so-called '*Larus barrovianus*,' the series also including over a dozen of the pure white phase known as '*Larus hutchinsii*,' probably the '*arcticus*' of earlier writers. The plumages of this species are too well known to require careful description, but the plumage changes in connection with the moults have never been thoroughly described. The sequence is as follows:

Natal Plumage.— The chicks are thickly covered with a soft, dingy white down with large brownish gray spots clouding the upper surface, especially about the head. Hatching in June, before July is spent, they are well advanced into the next plumage, the flight-feathers of which are among the first to appear.

Juvenal Plumage.— August or early September finds birds wholly in the brown barred or mottled plumage, of which the flight-feathers and the tail are retained for a full year, the body plumage and some of the lesser wing-coverts being partially renewed at two periods of moult, the postjuvenal in November or later and the prenuptial beginning often as early as the end of February. Birds may be found moulting at any time between October and May, and it may possibly turn out that but one moult takes place, but as the renewal of feathers is rather limited, and

as fall specimens always reassume brown feathers while late winter birds acquire much paler brown feathers usually mixed with white or gray ones, thus approaching the plumage of the adult, it is but logical to assume that some birds at least undergo a double moult during the first winter of their lives. In juvenal plumage the back and upper surface of the wings is dull white, the individual feathers coarsely barred and mottled with a pale buffy brown or drab-gray, giving a 'watered' effect, as if the color had run. The head, throat and neck are similar but paler, the brown in obscure streaks, and the lower parts are darker gray with indistinct clouding. The tail resembles the back but the mottlings are generally finer. There is considerable variation in the color of the primaries and secondaries of different specimens. They vary from pale ecru-drab, which tinges the yellowish white shafts, to dull white with straw-yellow shafts. There is usually a subapical dash or spot of brown, most conspicuous on the inner and often lacking on the outer primaries, especially if these be white. The first primary is usually palest on the outer web, and nearly all of them become paler toward their tips where occasionally an obscurely indicated white area may be found. The legs, feet and eyelids are flesh colored, becoming brownish ochre in the dried skin. The bill of very young birds is also largely flesh colored, later becoming bluish black at the tip beyond the nostril and drying in skins to a brownish black with the base dull buff-yellow. The iris is brown and, like the bill, remains of the same color for about a year.

First Winter Plumage.— Acquired by a partial postjuvenal moult. As explained earlier, this plumage does not appear to differ from the juvenal which it only partially supplants, chiefly on the back. The overlapping of the postjuvenal and prenuptial moults obscures the question of whether all young birds pass through one or two moults during their first winter, but the evidence is in favor of two. Before the time of the prenuptial arrives birds have faded out a good deal and are often quite white in appearance with the brown mottling very obscure. The paler of the drab primaries apparently fade to white in some cases.

First Nuptial Plumage.— Like many other species of the larger gulls *glaucus* does not breed the first year and most of them remain in a brown plumage not materially different from the juvenal.

Some, however, at the prenuptial moult in March or April acquire to some extent white feathers about the head and body and a few pearl-gray ones on the back, but brown feathers are predominant, rather less distinctly mottled than those which preceded them.

Second Winter Plumage.— There is no dearth of moulting specimens taken during August and early September to show what changes take place at the postnuptial moult, but which birds illustrate the first and which the second (a year later) it is not so easy to determine. If the age of the different specimens could be known the matter would be simple, but it is probable that, as is the case with other species, the great majority of 'immature' plumages result from the first postnuptial moult. In *glaucus* the variety of plumages appears to be considerable. In a very few birds brown mottled feathers still predominate, although birds with fairly developed gray mantles, white tails sprinkled with brown, and having pale ecru-drab or white primaries are perhaps the most usual type of plumage. The white heads and bodies are much obscured with smoky gray. An extreme is represented by birds absolutely pure white, the '*hutchinsii*' type. I was in error some years ago when I conjectured such birds to be old ones, for they are undoubtedly in a second year plumage, and moulting birds examined show the transition into it and also out of it at a later moult. Curiously enough, in some specimens new brown mottled feathers are succeeding to the white ones, both at the prenuptial and at the postnuptial moults, at the latter period pinkish drab primaries replacing snow white ones! Between the two extremes, the brown mottled and the white birds, every sort of variation may be found, and in some of the specimens examined, new brown, new white and new gray feathers (and even a triple mixture in single feathers) may be found growing side by side. It is evident therefore that not only does the vigor of individual birds vary, but the pigmentation of the feather germs of the individual varies to a considerable degree, possibly influenced by cold or food-supply. If white were the regular second year plumage there would be more of such specimens and not so many of tricolor plumage that certainly are suggestive of albinism on a large scale. Such white birds eventually assume normal gray plumage as specimens in moult clearly show. I am of opinion that nearly all of the 'imma-

ture' plumages are the result of the first postnuptial moult. The subapical spotting of the primaries betrays first year birds when it is present, but sometimes it is lacking. In second year birds it is, I believe, always lacking. Another earmark of first year birds is the dark bill. In second year birds it becomes more or less yellow with dusky bluish clouding, and the red spot usually does not develop till the second prenuptial moult has begun. The white birds have dark bills, which would indicate immaturity here as well as in plumage, and it will be noticed that, taken as a whole, the birds having the most yellow in the bill also have the most gray in their plumage, showing that both bill and feathers are equally influenced by whatever factor makes for maturity.

Second Nuptial Plumage.— The second prenuptial moult, at its height in April, is confined to the body feathers and a few of the lesser wing-coverts and scapulars. Gray, white, and brown feathers are regularly found. Some birds, except for wings and tail, are now like adults. The white birds acquire feathers of several colors, less often showing gray ones than do the browner birds.

Third Winter Plumage.— This plumage, acquired by the complete second postnuptial moult, appears to be that of the adult in the majority of cases. An occasional feather faintly sprinkled with brown may be found among the body or the tail feathers, but the adult primaries, pale pearl-gray like the mantle and fading to white a couple of inches from their apices, are now acquired for the first time. In still older adults the transition from gray to white on the primaries becomes more pronounced (as it always is on the secondaries and tertiaries) and the heads and bodies become pure white with scarcely a trace of the dusky clouding of younger birds. But here again the birds of the white type show a curious reversion to the juvenal condition of plumage for, as before stated, I have examined several that are exchanging white primaries for pale drab ones and white body feathers for brown mottled ones. On the other hand I have seen two others that are passing directly from white to gray. All of these specimens have the white wings and tails that are acquired at the first postnuptial moult and must therefore be two years old, for I do not believe a juvenal plumage could ever fade to the whiteness seen in these birds. I am forced to conclude, therefore, that white birds are a

year behind in their development, becoming white at the first postnuptial moult through deficiency of pigment, and assuming only at the second postnuptial a plumage that more vigorous birds acquire at the first postnuptial. From this it is evident that it is possible in a very few cases to confuse third winter with second winter birds, and this species illustrates well the difficulties that beset the study of plumages and moults.

It is further evident that only a small percentage of birds of this species fail to acquire adult plumage by their third winter while a good many of them possess the adult mantle and white body feathers of the adult during their second winter, off-color wings and tails alone marking them. It is impossible to estimate with any degree of accuracy what proportion of young birds at each successive moult pass to a more adult stage of plumage and what proportion reassume the feathers of adolescence, but it would seem that the time usually assigned for the attainment of adult plumage is exaggerated. Apparently, females are more backward in assuming mature feathers than are the males.

The sequence of plumages and moults here outlined obtains for all the species under consideration. There is reason, however, for believing that in the smaller species a larger proportion of the birds at the successive moults assume feathers characteristic of the adult than is the case in the larger species.

Larus leucopterus. WHITE-WINGED OR ICELAND GULL.

This species is perhaps even more Arctic in distribution than *glaucus*, its breeding range extending from Spitzbergen westward to Greenland and the shores of Baffin's Bay. Thus it is associated throughout its range with *glaucus*, although seldom moving as far south in winter. Some sixty specimens have passed through my hands, and the sequence of moults and plumages is precisely the same as in the larger *glaucus* of which it is a small edition. There is, however, no overlapping of dimensions, for even the largest male fails to reach the size of the smallest female *glaucus*.

Specimens of adults are rare in collections, for I have found only fourteen in all. Young birds in juvenal plumage do not

differ from *glaucus*, as a rule, although the primaries more frequently have white or brownish shafts untinged with the yellow so prominent in *glaucus*. Some birds, too, are in the mottling perhaps more black and white rather than brownish. Second year birds more often have adult mantles than do second year *glaucus*, but the creamy or pinkish drab, or white primaries and brown mottled feathers in wings or tail betray their age. The white phase is also illustrated by two specimens, one in the collection of Mr. Everett Smith which is white except for a few pearl-gray feathers on the back, very pale drab primaries, and a few obscure mottlings on otherwise white feathers, and one in the American Museum which is pure white except for a small area of gray on the back. These are doubtless birds that have passed through the first postnuptial moult like '*hutchinsii*,' and the partly yellow bills support this assumption. They are probably the '*candidus*' and '*glacialis*' of early writers.

It should also be noted that in adults the mantle is rather darker than that of *glaucus*, although the color of each species varies somewhat in shade. In both of these gulls the gray is subject to considerable fading, and the transition from gray to white a couple of inches or so from the tips of the primaries is never abrupt.

Larus glaucescens. GLAUCOUS-WINGED GULL.

While this medium-sized gull is not properly white-winged, I introduce it here for purposes of comparison. Its range is along the western coast of North America from the United States northward. In size it is a little larger than *leucopterus* with a much larger bill; in all plumages it differs radically from *glaucus* and *leucopterus*.

The *juvenal plumage* is deep plumbeous gray with broad dark barring or mottling and obscure whitish edgings. The tail is nearly solidly gray sprinkled basally with white, and the flight-feathers, including the quills, are also dark gray. The legs and feet are flesh-colored and the bill brownish black. Birds in this plumage are never so pale (especially the primaries) as the darkest *leucopterus*, nor are they ever so dark as the palest of the black-pri-

maried species. They fade to a decidedly brown shade, almost mouse gray, but their color (especially that of the primaries) and the size of their bills even when young are cardinal points by which to recognize them.

The *first winter plumage* is like the juvenal, but at the prenuptial moult white about the head and body and gray on the back begins to appear in some specimens, thus marking the *first nuptial plumage*.

In the *second winter plumage* unpatterned drab or mouse-gray primaries are most frequent, together with the gray mantle of the adult. The white head and neck, as in the other species, are much clouded with dusky markings, which are lost at the next prenuptial moult. I do not think that primaries with the apical white spots of the adult bird are ever developed until a year later, but in some birds there is a foreshadowing of the white spot on the first primary. The *third winter plumage*, that of the adult, is the result of the second postnuptial moult, after which very few birds can be found showing traces of immaturity. The new primaries are slaty, and white-tipped, the first and sometimes the second with subapical or sometimes terminal white 'mirrors,' quite unlike the unpatterned feathers of *glaucus* or the smaller *leucopterus*. The mantle varies from cinereous to plumbeous gray, the color running over into the primaries, which become decidedly slaty towards their apices. The white of the head and neck is still clouded, the dusky markings being characteristic of winter plumages until the birds are quite advanced in age. At prenuptial moults, as in the other species, these feathers are replaced by white ones.

Larus kumlieni. KUMLIEN'S GULL.

Since this species was described in 1883 by Mr. Wm. Brewster nothing has been added to our knowledge of it save the recording of additional specimens. I have examined twenty-two of these birds, about a dozen in adult plumage, several in intermediate immature stages, and four in a plumage that I am convinced is the undescribed plumage of the young bird. This material shows

that adult *kumlieni* is possessed of a character (the dusky subapical banding of the primaries) that neither *leucopterus* nor *glaucescens* have at any stage of plumage and therefore its right to rank as a species seems unimpeachable. The type locality is Cumberland Sound, where it breeds, and winter specimens have been taken chiefly along the Atlantic coast of Canada and the United States as far south as New York.

The plumages when taken up in their proper sequence are as follows:

The *natal down* is unknown as no chicks have as yet found their way into collections.

Juvenal Plumage.— Mr. L. Kumlien, who secured the type of the species at Cumberland Sound, mistook all the birds he saw for *glaucescens*, and speaks of the young as "even darker than the young of *L. argentatus*, the primaries and tail being *very nearly black.*" This is not an accurate statement for although the birds are as dark as *glaucescens* in like plumage, they are not as dark as *argentatus*. The juvenal plumage may be described as follows:

Above, drab-gray mottled with dull white and obscurely barred and mottled with darker gray; below more solidly gray, paler about the head and throat. Flight-feathers a brownish gray, darker than the body, the outer webs of the primaries darkest. Tail almost solidly drab-gray, the basal portion and the outer pair of rectrices sprinkled with dull white; the upper and under tail-coverts, similar in color but with a good deal of blotching or barring. Bill "dusky," paling to buffy flesh-color at base. Legs and feet "flesh" (in dried specimen dull ochre). Iris "gray."

This description would fit any one of three birds, a male in the collection of Dr. Wm. C. Braislin, taken at Rockaway, New York, March 9, 1898, a female in the collection of Mr. Louis H. Porter, taken at Stamford, Conn., Feb. 16, 1894, and an unsexed (undoubtedly male) bird in my own collection obtained near Tadousac, Quebec, by an Indian during the winter of 1900–01, probably towards spring. They might easily pass for specimens of *glaucescens*, if it were not for the small bills and rather smaller dimensions. They are considerably darker (especially the primaries) than the darkest *leucopterus* I have seen, and the nearly solid gray of the

tail is a feature not seen in *leucopterus*. Besides this, the barring and mottling is much coarser and darker. In one of the birds there is a faintly indicated whitish subapical spot on the first primary, but similar spots may be found in other species of gulls and it seems to be a variable character of little importance. These specimens are perhaps not in full juvenal plumage, for they are probably partly in first winter dress, and two of them, just beginning the prenuptial moult, have acquired a few gray nuptial feathers of the mantle, but it must be remembered that the differences between juvenal and first winter plumages of the gulls are inappreciable. It is probable that the brown shade is due to fading and that earlier in the season these birds were grayer. They also bear quite a close resemblance to *L. californicus* in similar dress, but in this species the primaries are usually very much darker. In the young bird figured, Plate I (Collection of J. D., Jr., No. 7711, Tadousac, Que.) the wings, tail and part of the body plumage are juvenal, while some of the body feathers are doubtless the brown first winter with a sprinkling of the new first nuptial dress.

First Winter Plumage.— From what has just been said it has been made evident that this plumage differs in practically no respect from the juvenal. The postjuvenal moult is variable in the time of its occurrence, just as it is in all the gulls, and overlaps the prenuptial so as to be in many cases confused with it.

First Nuptial Plumage.— This plumage doubtless closely resembles the juvenal or the first winter, but birds may be expected to become whiter about the head and with a few gray feathers on the back.

Second Winter Plumage.— Like *leucopterus*, this species attains a considerable amount of adult plumage at this moult. The gray mantle, clouded white head and body and white tail indicate a close approximation to the adult plumage, but the primaries and other feathers of the wings are usually drab and not very much paler than in first winter birds. Dark gray or mottled feathers may also be found on the wings or tail or on the body posteriorly. The bills are yellow but often clouded and with the red spot lacking. The variation is considerable, just as in *glaucus* or *leucopterus* or *glaucescens*, but the darkness of flight-feathers or tail or of both combined is a character useful in sepa-

rating *kumlieni* from the two species last mentioned. The tail feathers, like those of *glaucescens*, while largely white may show gray patches, chiefly on the inner webs.

Second Nuptial Plumage.— The body plumage is renewed more or less at the second prenuptial moult, and I find evidence of this in several specimens, notably one in the collection of Mr. Wm. Brewster (No. 10052, Nova Scotia, March 8). Another bird in my own collection (No. 11577, Sable Island, Nova Scotia, March 19, 1903) is also moulting and is of particular interest because it is in a body plumage largely white, like the phase seen in both *glaucus* and *leucopterus*. The primaries of this bird are, however, quite dark brown, and there are other evidences of a faded brown mottled dress, so that it is probably a bird passing through the first prenuptial moult.

Third Winter Plumage.— Just as in the other gulls, this species after the second postnuptial moult assumes (except perhaps in a very few cases) the adult plumage, which is figured for the first time on the accompanying Plate I, by Mr. L. A. Fuertes, from an adult female in my collection (No. 9039, Sable Island, Nova Scotia, March 29, 1902). The text figure (Fig. 1) shows how this bird, *C*, differs in the pattern of the primaries from the type, *A* (U. S. Nat. Mus. No. 76225, Cumberland Sound, June 14, 1878), and I have also shown further variation in *B* (Coll. of E. Smith, No. 13631, Feb., Bay of Fundy) and in *D* (Coll. of E. A. & O. Bangs, No. 10709, ♀, Newfoundland, March 26). Mr. Brewster has so accurately described the type (Bull. N. O. C., VIII, 1883, p. 216) that no further description is necessary. We have in *kumlieni* a bird practically the size and color of *leucopterus*, but with slaty or brownish subterminal bars and shadings on several of the primaries, markings that neither *leucopterus* nor *glaucescens* ever have. The nearest approach to the former species may be found in a specimen (U. S. Nat. Mus. No. 161845, ♀, Baffinland, August) that lacks the bars but shows another distinctive character, to wit, a slaty outer web of the first primary to within a couple of inches of its apex. Dark markings also appear on the outer webs of the second and third primaries in this specimen. Adults therefore appear to vary from birds with bands on the second, third and fourth primaries to those in which the bands are more

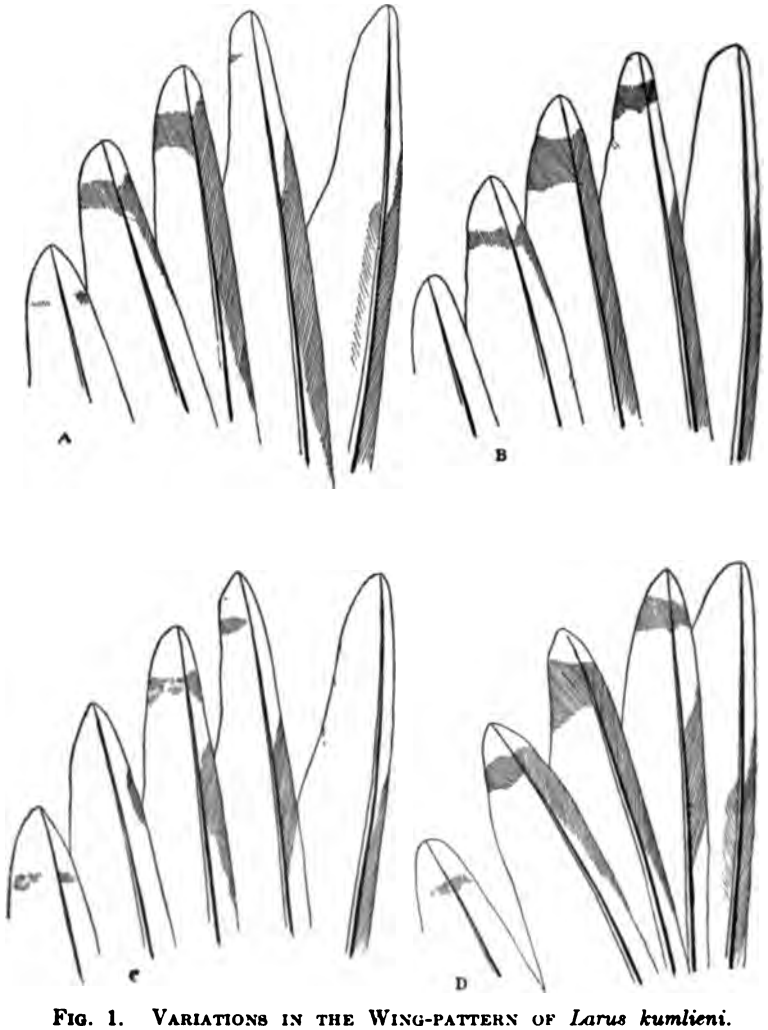


FIG. 1. VARIATIONS IN THE WING-PATTERN OF *Larus kumlieni*.

or less eliminated, but the slaty or brown edgings of the first and other primaries are always present.

Mr. Brewster has been in doubt whether the name *chalcopterus* might not be available for this species. The supposed type of Lichtenstein's bird is in the Berlin Museum where, through the courtesy of Dr. Anton Reichenow, I was permitted to examine it only last summer. It is No. 13583, a bird in juvenal or first winter plumage, darker than *glaucescens* ever is, and the primaries so nearly black that it is evidently the young of some species that has black primaries with white spots when adult,— possibly *L. californicus*. The dimensions best fit this species although the locality given is "Polar-meer," but at all events it is neither *leucopterus* nor *glaucescens*. Nor does Bruch's description of *chalcopterus* fit *kumlieni*, for the primaries do not have "round white terminal spots." Therefore Mr. Brewster was justified in giving a new name to a new species so rare that in twenty-two years only a like number of specimens have found their way into collections.

It is rather odd that *Larus leucopterus* in adult plumage from the Atlantic coast is almost unknown, the young birds being rather common, while in the same region adult *kumlieni* has been repeatedly captured and the young rarely. There is no doubt that both species will be found to be more abundant when they are diligently looked for. My specimen from Tadousac, Que., is I believe the first record of *kumlieni* for Quebec, and Mr. L. H. Porter's the first for Connecticut. There is also an unrecorded specimen, a young female taken at Plymouth, Mass., Jan. 5, 1888, in the museum at Tring, but with these exceptions most of the specimens are already on record. It may be well to note here that the type, at one time mounted and exposed to the light, has faded many shades lighter than are fresh birds.

Larus nelsoni. NELSON'S GULL.

In 1884, Mr. H. W. Henshaw ventured to describe this species on the strength of a single breeding male from Alaska (U. S. Nat. Mus. No. 97253, ♂ St. Michaels, Alaska, June 20, 1880). Since then a specimen from Bering Straits has turned up in the

British Museum, another male from St. Michaels in the Acad. Nat. Sci. of Philadelphia (No. 37692, St. Michaels, Alaska, ♂ Sept. 5, 1897) and recently a fourth (Mus. Carnegie Inst. No. 7729, ♀, San Geronimo I., Lower California, March 18, 1897) which is apparently a nearly adult female has been taken at a surprisingly southern locality. I have examined all of these four birds and find that the type, the specimen in the British Museum, and the bird in the Philadelphia Academy are very similar, and the pattern of the primaries corresponds very nearly to the type specimen of *kumlieni*, the outer webs being slaty or brownish but the terminal bands much less distinct. The Carnegie specimen, on the other hand, is nearly the counterpart of the U. S. Nat. Mus. specimen of *kumlieni* (No. 161845) described above; there is no banding, but merely dusky outer webs of the primaries. Doubtless in time other specimens will be obtained, but judging from the few extant, *nelsoni* seems to have as good a claim for specific distinctness as does *kumlieni*, of which it appears to be a large edition. It is a species about the size of *glaucus* and as much larger than *kumlieni*, 16 %, as *glaucus* is larger than *leucopterus*. The bill, however, seems to be only about 24 % larger, but with tarsi and toes relatively very large.

The young bird has never been described, but inasmuch as *kumlieni* in juvenal plumage is scarcely to be distinguished from *glaucescens*, there is every reason for expecting the corresponding plumage of *nelsoni* to be practically the same. The birds, though, ought to be larger than *glaucescens* and I have no doubt that very large specimens now labelled '*glaucescens*' in various collections will eventually prove to be *nelsoni*. Such a bird has been recorded in the British Museum Catalogue, but somehow I overlooked it when examining the collection. In the American Museum, however, I find two specimens (Nos. 26234 and 61536) so much larger than *glaucescens* usually is that I believe them to be *nelsoni*. The tarsi and feet are unusually large and massive and the bills very heavy. The bird in the Philadelphia Academy is completing an adult postnuptial moult, but the other specimens throw very little light on the subject of moult in this species.

While I may not have been entirely successful in untangling the confusing multitude of so-called immature plumages in these spe-

cies, I have at least shown the way to complete success. To call a plumage merely "immature" is to confess we do not know much about it. Each of the species under consideration has no less than five plumages that may be called "immature," the juvenal, the first winter, the first nuptial, the second winter and the second nuptial, and in a few exceptional cases we may add the third winter and the third nuptial, making seven. Even the large amount of material I have examined does not make every one of these plumages perfectly clear, but it is only by the comparison of comparable plumages that we shall ever arrive at the desired goal. There is a large portion of Arctic America still unexplored, and with other material it may some day be necessary to revise in part my present conclusions.

My work has been prosecuted at intervals during several years but I trust it has lost nothing by being so long delayed.

I am indebted to many institutions and individuals for courtesies and for the loan of specimens, particularly to Dr. Sharpe and Mr. Grant of the British Museum; to Mr. Hartert of the Rothschild Museum at Tring; to Dr. Reichenow of the Berlin museum; to Mr. Ridgway and Dr. Richmond of the U. S. Nat. Museum; Mr. Nelson of the Biological Survey; to Dr. Allen and Mr. Chapman of the American Museum of Natural History; to Mr. Stone of the Philadelphia Academy of Natural Sciences; and to the following private collectors, viz. Mr. O. Bangs, Mr. C. F. Batchelder, Dr. L. B. Bishop, Mr. Wm. Brewster, Dr. Wm. C. Braislin, Mr. R. W. Peavey, Mr. L. H. Porter, and Mr. Everett Smith.

NOTES ON THE WINTER BIRDS OF HANCOCK COUNTY, MISSISSIPPI.

BY ANDREW ALLISON.

BELIEVING that a series of local list will be a good prelude to a published list of the avifauna of Mississippi —"one of our best neglected States," an ornithologist of experience has called it — I have thought it advisable to put forward the following few remarks on the winter birds of Hancock County; more especially as the coast region of this State seems to be even less known than the interior.

Hancock is the most western of the three coastal counties of Mississippi. Its western border is Pearl River, and extensive salt meadows cover much of that part. The county seat, Bay St. Louis, is on the eastern border; and here the marshes are smaller, and low hills and flat pine barrens are the salient features. This town served as the base of operations for the four-day trip resulting in the records that follow.

The hills, as well as the flat lands, are more or less pine-clad; but oaks — *Quercus falcata, Q. stellata parvifolia, Q. aquatica, Q. laurifolia, Q. nigra,* and *Q. cinerea* — are very important; the live oak (*Q. virens*) is chiefly restricted to those hills bordering the bay from which the town takes its name. *Hicoria tomentosa, Magnolia fœtida,* and *Oxydendron arboreum* are also common upland trees; the pine barrens are covered with the gall-berry (*Ilex glabra*); and *Callicarpa americana* — the 'Spanish mulberry'— is the most important of the dry-ground shrubs.

Between these hills are sluggish streams, draining into the marshes of the bay; in the low, wet, areas along these streams grow *Magnolia glauca, Nyssa biflora* — which also spreads farther up the hillside, —*Cyrilla racemiflora,* and *Cliftonia ligustrina.* Several species of *Smilax* climb over these trees; and of shrubs there are *Azalea nudiflora et viscosa, Vaccinium elliottii,* and, most important of all, the anise or rose-bay (*Illicium floridanum*). *Salix longifolia* occurs in more open places, and *Acer rubrum* is also common. These strips of low wet woods are called 'bay-galls.'

Where these streams empty out into the marshes, there are heavy swales of saw-grass (*Cladium effusum*); but the typical 'marsh grass' is *Juncus ræmerianus*. Where pools occur in the marsh, there are *Sagittaria lancifolia* and *Pontederia cordata*.

The following observations were made by Messrs. H. H. Kopman, W. B. Allison, and the writer, February 13–16, 1904.

1. **Podilymbus podiceps.** PIED-BILLED GREBE.—Two seen in the Bay near its head, where Jordan River empties into it.
2. **Larus delawarensis.** RING-BILLED GULL.— Common.
3. **Larus argentatus.** HERRING GULL.— Common; one was picked up dead, though unwounded, on Feb. 14.
4. **Larus atricilla.** LAUGHING GULL.— Few seen.
5. **Ardea herodias.** GREAT BLUE HERON.— One seen in the Jordan River marsh.
6. **Rallus elegans.** KING RAIL.— Common, but inconspicuous.
7. **Oxyechus vociferus.** KILLDEER.— Not uncommon on the beach.
8. **Ægialitis semipalmata.** SEMIPALMATED PLOVER.— A few were seen in company with Killdeers, Feb. 13. This is our first winter record.
9. **Zenaidura macroura.** MOURNING DOVE.— One only.
10. **Cathartes aura.** TURKEY VULTURE.— Common.
11. **Catharista urubu.** BLACK VULTURE.— Common; the two species do not mix much.
12. **Buteo borealis.** RED-TAILED HAWK.— A large hawk seen at a distance on Feb. 16 must have been of this species.
13. **Falco sparverius.** AMERICAN SPARROW HAWK.— Not common.
14. **Syrnium varium.** BARRED OWL.— One only.
15. **Dryobates villosus audubonii.** SOUTHERN HAIRY WOODPECKER.— A few.
16. **Dryobates pubescens.** DOWNY WOODPECKER.— Uncommon.
17. **Dryobates borealis.** RED-COCKADED WOODPECKER.— Common in the pine barrens.
18. **Centurus carolinus.** RED-BELLIED WOODPECKER.— A few.
19. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.— Two or three in the pine woods.
20. **Colaptes auratus.** FLICKER.— Common; mostly in small flocks.
21. **Sayornis phœbe.** PHŒBE.— Common.
22. **Cyanocitta cristata.** BLUE JAY.— Common.
23. **Corvus brachyrhynchos.** AMERICAN CROW.— Very common.
24. **Corvus ossifragus.** FISH CROW.— Common.
25. **Agelaius phœniceus floridanus.** FLORIDA RED-WINGED BLACKBIRD.— Rather common in flocks.
26. **Euphagus carolinus.** RUSTY GRACKLE.— One flock, in a pine clearing.

27. **Quiscalus quiscula aglæus.** FLORIDA GRACKLE.— A few.

28. **Megaquiscalus major.** BOAT-TAILED GRACKLE. — Fairly common on the beach and in the marshes.

29. **Astragalinus tristis.** AMERICAN GOLDFINCH.— Rather common, in medium-sized flocks among deciduous trees.

[**Spinus pinus.** PINE SISKIN?— Doubtful; a flock of supposed Siskins seen Feb. 13.]

30. **Pocœcetes gramineus.** VESPER SPARROW.— Rather common in the clearing; in song.

31. **Passerculus sandwichensis savanna.** SAVANNA SPARROW.— Sparingly present in the extensive clearings.

32. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.— Locally common in thickets.

33. **Chondestes grammacus.** LARK SPARROW.—We found this species in the pine clearings, about equally common with the Vesper Sparrow, and in song. Up to this time we had found it only very rarely.

34. **Spizella socialis.** CHIPPING SPARROW.— Very common in large flocks in the pine clearings; a good many in the town.

35. **Melospiza georgiana.** SWAMP SPARROW. — Common in suitable situations.

36. **Pipilo erythrophthalmus.** TOWHEE.— Only a few.

37. **Cardinalis cardinalis.** CARDINAL.— Rare! This is hardly normal, though it is never as common here as is *C. c. magnirostris* in lower Louisiana.

(38. **Progne subis.** PURPLE MARTIN.— A spring bird, of course, and so hardly in keeping in this list; a few were present, being seen and heard nearly every day of the trip.)

39. **Lanius ludovicianus.** LOGGERHEAD SHRIKE.— Common; the small size of the resident pine woods form was noticeable.

40. **Ampelis cedrorum.** CEDAR WAXWING.— Only a few heard.

41. **Helminthophila celata.** ORANGE-CROWNED WARBLER.— Conspicuous when present, and not at all uncommon in the deciduous woods, though always single.

42. **Dendroica coronata.** MYRTLE WARBLER. — Very common, and ubiquitous; present even on the sandy beach.

43. **Dendroica vigorsii.** PINE WARBLER.— Very common, singing often.

44. **Dendroica palmarum hypochrysea.** YELLOW PALM WARBLER. — Common; always more or less gregarious, and associated with the preceding.

45. **Geothlypis trichas ignota.** FLORIDA YELLOWTHROAT.— Two heard.

46. **Anthus pensilvanicus.** AMERICAN PIPIT. — Not common; on the beach and in cultivated lands.

47. **Mimus polyglottos.** MOCKINGBIRD. — Common; many in song.

48. **Toxostoma rufum.** BROWN THRASHER.— Noted only twice.

49. **Thryothorus ludovicianus.** CAROLINA WREN.— Very common.

50. **Thryomans bewickii.** BEWICK'S WREN.— Noted twice.

51. **Troglodytes ædon.** HOUSE WREN.— Not common.

52. **Cistothorus stellaris.** SHORT-BILLED MARSH WREN.— Not uncommon.

53. **Sitta carolinensis.** WHITE-BREASTED NUTHATCH.— Very conspicuous; we saw it in company with Bluebirds and Pine and Yellow Palm Warblers, even feeding with them on the ground, in one instance.

54. **Sitta pusilla.** BROWN-HEADED NUTHATCH.— Abundant among the pines.

55. **Bæolophus bicolor.** TUFTED TITMOUSE.— Very common.

56. **Parus carolinensis.** CAROLINA CHICKADEE.— Common.

57. **Regulus satrapa.** GOLDEN-CROWNED KINGLET.— Common; the characteristic kinglet of the conifers.

58. **Regulus calendula.** RUBY-CROWNED KINGLET.— Less common than the preceding.

59. **Hylocichla aonalaschkæ pallasii.** HERMIT THRUSH.— Common in low thickets; almost unknown here for a few years after the snow of 1895, this bird has again become as common as ever.

60. **Merula migratoria.** AMERICAN ROBIN.— Over great tracts of young pine, cleared land, and burnt forest, we often walked, seeing hardly any birds but these; they flushed before us at almost every step, and soon became an important feature of the landscape.

61. **Sialia sialis.** BLUEBIRD.— Very common, and in fine song.

NOTES ON THE SCREECH OWL.

BY P. T. COOLIDGE.

I.— A YOUNG SCREECH OWL IN CAPTIVITY.

ON June 5, 1902, I obtained a young Screech Owl (*Megascops asio*), which had been found two or three days before in a road in Cambridge, Mass. A brief description of the bird at the beginning of its period of captivity will give some idea of its age. Its total length was about seven inches, of which about one inch was tail. The whole plumage was remarkably soft and fur-like; the facial disk was not very clearly defined, and the ears were merely certain areas in the scalp plumage the feathers of which could be erected at will. At the end of the first week of captivity, the owl could fly well. Before acquiring this accomplishment, when put in some position of precarious footing, like the slippery arm of a chair, he could move most easily by crawling, sometimes clinging with his bill parrot-fashion. On the floor he would patter away as nimbly as a sandpiper.

The first evening he was as tame as a hungry robin nestling. He would perch willingly on one's finger, and would allow himself to be stroked. But when he first saw me the next morning, his gentleness had all disappeared. Hissing, and snapping his bill, he swayed from one foot to the other, and held his wings off from his sides and ruffled his feathers so that he was fully six inches wide. His hiss, in particular, was about as terrifying as a gentle puff from an empty atomizer. This performance was repeated but once or twice during the eleven weeks of his imprisonment with me. Thinking the bird might be hungry, as he had been given nothing the night before, I tried as soon as possible to feed him with liver. He protested much, by a rather musical chattering, especially at my attempts to force morsels down his throat.

The cage which the owl occupied during the summer was a box eighteen inches high, twenty-five inches long, and twenty-two inches wide, one side of which was covered with "cellar window

wire." This box was placed facing north on a piazza. The owl did not like to be in the sunlight except towards dusk, but he always perched near the front of the cage where he could see what was going on. During the daytime he was always quiet unless his interest was aroused by something, when his head would swing as violently as the exciting object warranted. This habit of swinging the head was his most striking trait. His head was almost always moving, either from side to side horizontally, or around in a vertical and side to side circle, the eyes generally focused with a stare on one thing or another. If he became excited, this head motion was communicated to his whole body. The circle which his head then described would reach from the point of his greatest stature to the level of his perch. The head swinging was not without interruption, being broken by frequent intervals of a few seconds each of steady staring, or when things were quiet and the owl had become accustomed to his surroundings, by much longer periods of comparative stillness. This habit was noted in his Barred Owls by Frank Bolles. My owl occasionally acted at sight of a person as a wild Screech Owl does, that is, he would stiffen and would move his head only enough to keep an eye on the intruder, and he always behaved thus at sight of a cat or of a dog. After a preliminary grunt, '*urrh*,' omitted however if the intruder were human, he would draw his plumage close to his body, move his tightly closed wings back slightly, erect his ears, and half close his eyes. The reason for such behavior on one occasion at sight of a distant gray squirrel invites speculation. If a cat or a dog came too near, the owl would generally try to fly.

The quiet of the day was broken shortly after sunset by his beginning to jump back and forth from perch to perch, and to swing his head excitedly. Presently he would try to escape, either by starting to fly directly from his perch or by climbing about the wire netting and beating his wings against it: or he would give vent to his feelings by tearing the papers which were spread on the floor of the cage. This performance was repeated many times every evening. He raised a large scab on his cere by bumping it against the wiring. If food were offered him at this time, he would be too excited to notice it, but by eight or nine o'clock he would be more quiet and more hungry. If during this evening

performance anything were held before him so that he could not see out, he would side-step rapidly along his perch until he found an opening. Indoors on his first day with me, he slept whenever the room was quiet; I never discovered him asleep again, although he often looked drowsy in the daytime, and if he slept, it must have occurred late at night or in the early morning.

His principal diet was raw beef, which cut into pieces the size of the end of one's finger, was fed to him by hand. He would eat meat that was not only luminous but so foul as to be unpleasant to prepare for him. Although he was not urged to learn that beef placed in his cage was good to eat, it took him some time to discover the fact. Besides beef, he ate mice, liver, birds, frogs, perch, June bugs, and earthworms: caterpillars he would not eat, and also, unlike another pet Screech Owl of which I heard, he would eat neither bread nor shredded wheat. He ate eagerly in the morning, taking a large amount of food in one meal, but would refuse to eat more until afternoon, or very often until evening. When food was offered him, if hungry, he would take it in his bill, and if the morsel were small enough, would swallow it at once. If too large for immediate swallowing, he would transfer it to his claw and jump to the floor of the cage. June bugs were generally picked to pieces on the perch. After a thorough biting and pulling of its head, ears, skin, legs, and tail, a dead mouse would be swallowed whole, head first. An eight inch owl gagged with a three inch mouse was a sight more suggestive of pain than of enjoyment; sometimes the mouse's tail would refuse to be swallowed immediately, and might dangle from the owl's bill for a minute or more before disappearing within. Birds, unless small, as nestling English sparrows, were eaten differently from mice. Generally the head and the abdomen were torn to pieces and eaten first, the owl standing on the food with both feet, and with his bill jerking off morsels to be swallowed; the remainder of the bird was sometimes eaten and sometimes abandoned. The owl never troubled himself to kill a bird outright. Pieces of beef too large for instant swallowing, were torn to pieces like birds. If the owl did not care for food which he was thus preparing, he would back away from it a few steps, stretch up to his full height, and look down at it with a most comical expression and attitude.

During the course of a day in which a mouse, bird or June bug had been eaten, the indigestible parts, as fur, feathers, bones, wing-scales, were thrown up in a pellet.

Although there was always a dish of water in the cage, I saw the owl drink but once,— just after he had been taken out into the sunshine and had been made furious by much handling. From his somewhat bedraggled appearance on many mornings, I judged that the owl often bathed at night. One noon, also, shortly after an experience similar to that which caused him to drink, the wetness of his plumage showed that he had bathed.

Besides the calls already mentioned, there were others. Sometimes on one's going to his cage in the evening the owl would give once what sounded like that part of the usual Screech Owl call in which the quavering voice is kept at one note. When hungry, he whined, in a high key, faintly and hoarsely. One evening he gave a call which sounded something like, *Yuck, yuck, yuck, yuck*, the "yucks" at about the same rate as the notes of a flicker's long "laugh."

The pity for blindness expressed by most who saw the owl by daylight was undoubtedly wasted. He would watch crows several hundred yards away, and if an ant or other insect strayed into the cage, he was sure to watch it intently. Taken into direct sunlight, he generally stiffened slightly and blinked, but as he always did this at sight of a foe, it does not indicate that the light pained his eyes. In the sunlight he often panted, seeming to suffer more from heat than from light. Anyone who has seen Screech Owls in the field knows that it is as hard to stalk them from the sunny side as from the shady. At the sight of his image in a mirror, he showed surprisingly little excitement.

For the purpose of using my owl as a decoy, it was my custom to tie him by one leg with a short string to a stick, an undertaking which always produced a struggle, in which, and only in which, he would bite uncomfortably. For success in attracting birds, it was necessary to draw the attention of Robins or Chickadees to the owl, for only they would give a general alarm. This accomplished, other birds would join in the "rough-house." Besides Robins and Chickadees, I noted Orioles, Chipping Sparrows, and various species of warblers and vireos. A longer list would

doubtless have been obtained by further experiment. The birds scolded the owl harshly with their usual calls, but they often disappeared shortly, leaving the field to the Chickadees and Robins, which never tired of abusing him. The most vehement bird was a Wood Thrush, which dashed back and forth, passing so close to his head that he snapped savagely in defense at each attack. Blue Jays, even when I was at a distance, seemed to pay no attention to the scolding of the smaller birds. Scarlet Tanagers, and also to my surprise, Kingbirds and Flickers, refused to be interested. The owl watched his slanderers sharply and steadily. A pair of young Broad-winged Hawks, although of the usual tameness of the species, seemed to ignore the owl, which stiffened on seeing them against the sky, but failed to see them among trees.

To mounted birds my owl paid no attention unless they were moved. A mounted crow gave him much misery. When he first saw the crow moved, he would stiffen and erect his ears; then, as the crow was brought nearer he would fly unless cornered. In such strait he would order the crow to keep away by snapping his bill, ruffling himself into a mass of bristling feathers, from which would glare two fiery, blinking eyes, and most characteristically by giving a long-drawn *oooo*, in the voice of the "Hoot" Owl. His throat would swell much with this call. If the crow became too lively, the owl would fly, aiming first at the crow's head and then passing on. If the crow were made to peck him, he would snap his bill sharply, but would do nothing more.

Moulting, which was first noticeable on July 31, gave the bird his adult plumage and showed him to be of the gray phase. As the old feathers became more and more thin and shabby, the bright, compact, new plumage showed through, on the under parts first. The moulting was not entirely complete when I last saw him on August 21.

Though the owl showed intelligence in some ways, the fiercer qualities of a bird of prey remained unchanged. He was as ready to scold at one's approach, to bite if handled, and to escape at night on the last day of his captivity as on the first. In the daytime, if one approached his cage so slowly as not to ruffle his feelings, he would watch from his sleepy eyes, now and then swinging his head a little, so drowsily as to seem well-disposed. When

in an agreeable mood, he would allow his head to be stroked, but if the finger went too far down his back or touched his breast, the threatening bill opened. Sometimes, taking my finger in his claw, he would bite it gently all over, as if trying to discover its properties.

The owl is much more like other birds than may be generally supposed. My pet lacked the constraint and the desire to hide which wild owls usually show in one's presence, and accordingly his body was generally relaxed and tilted forward like that of a song bird. When quiet the owl perched on one foot and curled the other away under his feathers. Again, like other birds, he spent much time in preening. The fact that in captivity he could exercise very little may account for his occasionally stretching first one wing and then the other to its full extent downward behind him, and at the same time rising on his feet to his full height. Sometimes he raised his wings above his back and shook them. His disposition was stoical as to sounds: he would pay no attention to whistles, squeaks, or banging on the cage. One's movements were watched with great alertness, however, and if they were sudden, he would sometimes start.

My owl was released by a friend on September 15 of the same year: he seemed to be unwell at the time. During his three months' captivity he learned to trust people so that although he was ever ready to scold or bite, he would not seek concealment or flight at their approach. But except for this partial trustfulness, my pet was probably but little different in instincts from the owl that had always been free.

II.— MATING OF THE SCREECH OWL.

Visits at sunset in the spring of 1903 to the residence of a pair of Screech Owls near Cambridge disclosed the nature of their mating. The owl's dwelling was a hole about a foot in diameter and about twenty feet from the ground in a large elm. After my discovery of the tree in February, 1900, it was inhabited by a gray screech owl every winter until that of 1904–1905. As the bird's habits remained unchanged, and as it came and went at the same seasons, it is probable that the same gray screech owl

occupied the tree each winter. From the doings of the pair in mating, as will presently be described, I judge that this bird was the female. In 1900, 1901, and 1903, about the middle of March, a red owl joined the gray one for two or three weeks in her watch at the entrance of the cavity, the two birds sitting side by side. At the approach of a person the owls backed down out of sight into the depths of their hole, more promptly in the daytime than in the dusk, more promptly if one's approach were directly towards the tree than if otherwise, and the gray bird sooner than the red one. They returned to the entrance with promptness inversely proportional to their willingness to withdraw, the gray bird at noon not for perhaps fifteen or twenty minutes, the red one towards sunset in less than a minute.

The hour of the owls' movements was controlled by the degree of darkness. Hence on cloudy evenings the various events occurred rather earlier by the clock than at the hours given below, which apply to clear evenings. By watching at the foot of the owl tree, I found that the gray owl began her night's hunting, whether the red owl were present or not, about forty minutes after sunset. The gray owl was a little suspicious even in the dusk, any sudden or unusual movement causing her to retire for a few minutes. But the red owl in the dusk would not retreat under any provocation, although until a few minutes after sunset he would sit rather quietly, with plumage drawn tightly against his body, and ears erect. As the darkness increased his attitude relaxed: he would ruffle his plumage, scratch his head, and look about, into the distance, or down into the hole in which the female was hiding, or at me on the grass below. About ten or eleven minutes after sunset he left the tree and began singing his love song: he was now full of life and ignored all disturbance. His song was in B flat of the middle octave, a soft trill, seemingly far away, two or three seconds long, and closing with an upward inflection, as if the bird were asking a question,— as doubtless he was. Until the flight of the female, he sang from various perches, now from the branches of the elm, now from some neighboring tree, now from the rim of the cavity in the elm, his eyes fastened upon his quiet mate. His handsome head was continually bobbing and swinging. Once in a while the male would

light beside her; flashing of wings would follow, but the darkness made more exact analysis of their movements impossible. Occasionally he would fly out of sight. Returning from one of these trips he lighted upon the rim of the cavity and touched his bill to that of his mate, but whether to give her some tidbit, or merely a greeting, the darkness kept secret. Hoping to make the gray owl fly and to see by her silhouette if she had food in her bill, I threw sticks at her, but instead of flying she retired for a few minutes into her chamber. By the time the female flew, the darkness made it difficult to see the owls at all. The male disappeared at the same time, and although on the two evenings on which I saw the love-making, March 29 and April 5, I waited about ten minutes longer, nothing happened and the place seemed deserted. Whether or not the red owl followed the gray one in her hunting, and what took place at the tree later in the night must be left to the imagination.

On account of the exposed situation of the owl castle, I never risked the disclosure of the secret to greedy eyes by climbing up to examine its interior. However, as the gray owl was never seen from the first week in April until the following autumn, and as no young were ever seen at or near the tree, the nesting more probably took place elsewhere, the tree under observation being only the winter quarters of the female. The red owl was not seen after the second week in April, except in 1903, when he apparently lived alone at the tree until the last week in May.

In the spring of 1904 no mate joined the gray owl at the tree. It would be interesting to know whether she advertised herself as a gay widow, or whether a mate found her in spite of her demure ways, but notwithstanding frequent visits she was not seen after the evening of March 24, 1904, and it is probable that the eyrie is of the past.

A CONTRIBUTION TO THE ORNITHOLOGY OF SOUTH CAROLINA, CHIEFLY THE COAST REGION.

BY ARTHUR T. WAYNE.

Podilymbus podiceps. PIED-BILLED GREBE.— An abundant resident, breeding in freshwater ponds or large rice field 'back-waters' where the water is generally from four to ten feet deep. The number of eggs ranges from six to eight, and incubation begins as early as the first week in April in some forward seasons. After the breeding season is over both young and adult betake themselves to the salt water creeks,— very rarely going as far as the inlets. During the breeding season, the principle food of this species is leeches.

Anas obscura rubripes. RED-LEGGED BLACK DUCK.— A common winter and early spring resident; arriving the last week in November and remaining until the last week in March. It is always outnumbered by *obscura*, and examples of both forms are commonly shot from the same flock. Professional gunners make no distinction between the two forms — *rubripes* being considered the *very* adult of *Anas obscura*.

Tantalus loculator. WOOD IBIS.— A few individuals *winter* regularly as far north as Lat. 33°. From the middle of June until the last of October, enormous flocks, composed entirely of *young* birds, are to be seen daily on the sound in front of my house. At times the Wood Ibis is very unsuspicious and confiding. I have seen one of these birds deliberately follow a boat as long as fish were being thrown to it, one at a time, which the ibis devoured ravenously. This species breeds in some numbers in Caw-Caw swamp, Colleton County.

Botaurus lentiginosus. AMERICAN BITTERN.— During the months of May, June, and July, 1887, I saw several pairs of these birds in an enormous 'back-water' near Yemassee, S. C., where the Purple Gallinule (*Ionornis martinica*) was breeding in large numbers, but despite all my exertions I was unable to find a nest, although the young birds were seen in June. In 1890, I again

visited Yemassee, and spent eight months collecting in that locality, and although I frequently saw many Bitterns from March until October, I was unable to obtain a nest with eggs.

Hydranassa tricolor ruficollis. LOUISIANA HERON.— This heron still breeds abundantly, and both *young* and adults *winter* numerously in sheltered ponds on the coast islands.

Florida cærulea. LITTLE BLUE HERON.— Breeds in enormous numbers in the fresh-water 'reserves,' and both phases *winter* abundantly on the coast islands.

Butorides virescens. GREEN HERON.— Resident. This species *winters* in small numbers on the coast islands.

Nycticorax nycticorax nævius. BLACK-CROWNED NIGHT HERON. — Breeds sparingly, and *winters* numerously on the coast islands. While at Capers's Island, S. C., on Feb. 6, 1905, I saw in a large pond of brackish water, all congregated together, and seemingly in perfect harmony, the following species: — *Ardea herodias, Hydranassa tricolor ruficollis, Florida cærulea,* and *Butorides virescens.*

Nyctanassa violacea. YELLOW-CROWNED NIGHT HERON.— On April 20, 1896, I secured a nest and three eggs. The nest was built in a short-leaf pine, 40 feet from the ground, on the high land and half a mile from water.

This fine species breeds in the cypress swamps; generally in isolated pairs, and is as much a diurnal species as *Ardea herodias.* On April 15, 1905, I counted sixteen individuals in a radius of ten rods. The food of *violacea,* in the breeding season, is chiefly cray-fish. After the breeding season, these birds resort to the *salt* marshes, and feed chiefly upon 'fiddlers' and fish.

Himantopus mexicanus. BLACK-NECKED STILT.— About the middle of May, 1881, I observed at least two pairs of these birds in a freshwater pond, with a growth of reeds, tussocks of grass, and small myrtle bushes, on the extreme eastern end of Sullivan's Island, S. C. These birds were very noisy, and their antics so peculiar that I watched them closely for a long while. In those days my knowledge of ornithology was very limited as regards the distribution of species, and I was not aware of the importance of my discovery. The day upon which these stilts were observed, I was in quest of eggs of *Sterna antillarum, Rynchops*

nigra, Ochthodromus wilsonius, Hæmatopus palliatus, and *Symphemia semipalmata,* which, in those days, bred numerously on Sullivan's Island. There is no question whatever that these birds were breeding, but I did not wade into the pond on account of moccasin snakes, which were abundant. About two weeks later, a relative, who had been spending several months at Cape Canaveral, Florida, brought to me, upon his return to Charleston, several complete sets of eggs of *Himantopus mexicanus* that he had personally collected at the Cape. His description of the breeding habits of the birds left no doubt in my mind that the birds I saw were breeding. This pond was destroyed by a very severe storm before 1884, and since that discovery was made, I have failed to note again the presence of this species in South Carolina.

Philohela minor. AMERICAN WOODCOCK.—In Audubon's 'Birds of America,' Vol. VI, p. 18, he refers to this species as breeding from February to June. This is substantiated by a fine set of four eggs which were found on Capers's Island on February 13, 1903. The nest was on the ground, on a slightly rising plain, and near a wet cover. The eggs were perfectly fresh. On March 4, 1903, another Woodcock's nest was found with four freshly laid eggs, and, in company with my friend, Mr. Benj. T. Gault, of Illinois, we saw the bird incubating. These eggs, or at least two of them, are the handsomest and deepest colored that I have yet seen. Mr. J. H. Riley, in 'The Auk' for July, 1904, p. 384, asks if Woodcock eggs "fade out during incubation or without it." In reply to this question, I will say that the two sets above mentioned are the only ones I have ever seen or taken during the past twenty-five years, and as both sets were fresh and not incubated the color did not change perceptibly in the set taken February 13; while the set taken March 4 did *not* fade at all, at least in the two richly colored eggs. The Woodcock 'sings' and 'peeps' from December until the middle of March in South Carolina.

Ereunetes occidentalis. WESTERN SANDPIPER.—This species is only absent during a part of May and June on the coast. It arrives about the 8th of July in worn breeding plumage, and winters in countless thousands. It is a curious fact that of nearly all the species of Limicolæ that occur on the South Carolina coast,

and which breed in the Arctic Lands, should arrive during the first half of July — namely: — *Macrorhamphus griseus et scolopaceus, Tringa canutus, Actodromas minutilla, Ereunetes pusillus, Calidris arenaria, Totanus melanoleucus et flavipes, Numenius hudsonicus, Squatarola squatarola, Ægialitis semipalmata, Arenaria interpres? et morinella. Actodromas maculata* arrives the early part of September, while *Actodromas fuscicollis* and *Pelidna alpina sakhalina* do not arrive until October.

Limosa fedoa. MARBLED GODWIT.— An excessively rare migrant. During the past twenty-five years I have taken but two specimens, as follows:— No. 443, November 3, 1884, ♀, Mount Pleasant; No. 1023, October 9, 1885, ♂, Sullivan's Island.

Bartramia longicauda. BARTRAMIAN SANDPIPER.— The 'Field Plover' is now one of the rarest of the waders that used to be abundant on this coast during both migrations. The earliest spring record upon which I have taken this fine bird is March 28, but they were generally to be seen between April 10 and 16. A pair of these birds undoubtedly bred within a half mile of my house in the year 1901, but all attempts to find the nest proved futile. On May 11, 1901, one of these birds actually followed me, as the Willet (*Symphemia semipalmata*) does in the breeding season. The nest was, or had been, in a cotton field, but must have been destroyed the previous day as the field was ploughed. When this sandpiper grew tired of hovering over me (with almost motionless wings), it would alight on the top of a dead oak tree. I have occasionally seen this bird light on the top of a dead tree in the month of March. These birds must have eventually raised a brood on this plantation, as they were seen until June 20.

Numenius longirostris. LONG-BILLED CURLEW.— The 'Spanish Curlew' is now about extinct on the South Carolina coast, where it once swarmed in countless multitudes. Since 1885, it has been supplanted by the Hudsonian Curlew (*Numenius hudsonicus*), which is still exceedingly abundant during the spring and autumnal migrations. From 1879 to 1885, *longirostris* was to be found in the immediate vicinity of Charleston, but its numbers steadily diminished year after year until at the present time it is so rare a bird that one is seldom seen; in fact I have not seen one since September 23, 1899. I do not think that *longirostris*

has been extirpated by being shot, but that it has changed its route of migration. Audubon, in his 'Birds of America,' Vol. VI, pp. 35 and 36, states, upon the authority of Dr. Bachman, that this Curlew "breeds on the islands on the coast of South Carolina," and it "places its nests so close together, that it is almost impossible for a man to walk between them, without injuring the eggs." Later writers have also asserted that this Curlew breeds abundantly on the South Atlantic coast, namely — Dr. Elliott Coues, 'Birds of the Northwest,' p. 508; 'Key to N. A. Birds,' p. 645; Prof. Daniel Giraud Elliot, 'N. A. Shore Birds,' p. 153; 'A. O. U. Check-List,' 1895, p. 97, and Wickersham, 'The Auk,' Vol. XIX, Oct., 1902, p. 353. I am of the opinion that the authors above mentioned accepted Audubon's account of Dr. Bachman's statement as a fact, and did not substantiate it by their personal experience. It may appear hypercritical to question Dr. Bachman's statement that this Curlew bred on the coast islands, but the eggs were not described by either Audubon or himself, and as far back as 1879 there were no eggs of *N. longirostris* in the Charleston Museum; while the egg of the 'Stone Curlew' (*Symphemia semipalmata*), were well represented and were classified as eggs of the Long-billed Curlew! I have been unable to obtain any evidence, even from the "oldest inhabitants," that *N. longirostris ever bred anywhere* on the South Carolina coast. The birds simply appeared in the autumn and winter, and migrated to their breeding grounds in the Northwest late in the spring. Dr. Bachman made many errors respecting the Limicolæ and I may mention a few. He stated in Audubon's 'Birds of America,' Vol. V, p. 256, that *Tringa canutus* does not occur in South Carolina, in "full plumage"; and again in Vol. VI, p. 12, he states that *Macrorhamphus griseus* does not occur in the "spring in the vicinity of Charleston." It is hardly worth mentioning that both *Tringa canutus* and *Macrorhamphus griseus* occur abundantly on the South Carolina coast during the northward migration. Both of these species attain the highest possible plumage before they start on their long journey to the Arctic Regions. In 1885, Mr. Brewster and the writer collected a very fine series of *Tringa canutus*, in the month of May on Sullivan's Island, S. C. *Macrorhamphus griseus* is in full nuptial plumage by April 28, and it is

characteristic of the males during the month of April and May to soar high in the air with wings 'set' and sing their love song. It will be seen from the above that the Long-billed Curlew will have to be excluded from the list of birds which breed in the South Atlantic States.

Numenius borealis. ESQUIMAUX CURLEW.— I have never seen this Curlew alive, but in the Museum of the College of Charleston there were many mounted specimens, that were labeled by Dr. Bachman as follows: "South Carolina, *Winter.*" All of these specimens were dust-stained and moth-eaten, and when Dr. G. E. Manigault became the curator they, among other birds, were thrown away as trash.

Ectopistes migratorius. PASSENGER PIGEON.—The only Wild Pigeon I ever saw that was killed near Charleston, was shot by a colored man on November 21, 1885, at Sineath's Station, thirteen miles north of Charleston, while he was on a 'deer stand.' I was on the station waiting for the train to go to Charleston, when two hunters came up. One of them took from his bag a young female Wild Pigeon and showed it to me with much pride. As the bird was shot with buck-shot it could not be preserved. While spending a portion of the summer of 1882 at Caesar's Head, Greenville County, South Carolina, I saw two pairs of these birds near the summit of the mountain.

Ictinia mississippiensis. MISSISSIPPI KITE.— This fine bird breeds regularly in considerable numbers near Charleston, but in the region about Yemassee it is an abundant breeding bird. A pair of these kites have bred for ten consecutive years within a mile of my house, and in the *same* nest for five years. On May 28, 1898, I succeeded in finding a man who had the courage to climb the gigantic pine in which the kite had a nest. The nest was 111 feet and 7 inches from the ground and contained one egg. This egg was sent to Dr. William L. Ralph, and is now in the Smithsonian Institution. On May 29, 1902, a single egg, which contained a good sized embryo, was taken from the same nest. The seasons of 1903 and 1904, the birds were found breeding within a hundred yards of their former nest, but the tree was so immense that I could not secure a climber. On May 27, 1905, I found that the kites had occupied the nest they had built and

used in the years 1903 and 1904, and I engaged a man who ascended the tree and lowered the single egg which it contained. This nest was 135 feet from the ground, and the egg contained a large embryo. The eggs are dull bluish-white, generally nest-stained, and measure 1.60 × 1.31 in. In the region about Yemassee, this kite certainly lays from two to three eggs. Mr. Chapman, in his 'Birds of Eastern North America,' states that this kite "is not common east of Louisiana." While I was on the Suwannee River, Florida, in 1892, I saw daily, between the river and a large plantation, from May 12 until May 28, *hundreds* of these birds, as well as *hundreds* of *Elanoides forficatus*. These kites arrived daily, and with the greatest regularity at 11.50 A. M., and departed at 2.08 P. M. This field was alive with grasshoppers, upon which the kites were feeding, and it was a sight that will never be forgotten.

Aquila chrysaëtos. GOLDEN EAGLE.— There are two mounted specimens of this eagle in the Museum of the College of Charleston. One was taken by Thomas Porcher Ravenel, Esq. (a brother of Henry W. Ravenel, the botanist), at or near Pinopolis, South Carolina, and the other specimen was taken by Mr. S. J. L. Matthews, in St. Andrew's Parish, which is just across the Ashley River, and near the city of Charleston. Both birds were taken in the winter. The bird, which was shot by Mr. Matthews, had killed a Wild Turkey (*Meleagris gallopavo*), and it was shot while eating the Turkey. Mr. Matthews's bird is mounted in a group to illustrate how it was secured.

Dryobates borealis. RED-COCKADED WOODPECKER.— Numerous authors, including Audubon, have stated that this species breeds in *dead* pine trees. The latter, in his 'Birds of America,' Vol. IV, p. 255, says that the 'nest is not unfrequently bored in a decayed stump about thirty feet high." I have seen perhaps a thousand holes in which this woodpecker had bred or was breeding, and *every one* was excavated in a *living* pine tree, ranging from eighteen to one hundred feet above the ground. This bird never lays its eggs until the pine gum pours freely from beneath and around the hole, and in order to accelerate the flow the birds puncture the bark to the 'skin' of the tree thereby causing the gum to exude freely. This species, unlike the Pileated Wood-

pecker, returns to the same hole year after year until it can no longer make the gum exude. But like the Pileated Woodpecker, it is much attached to the tree in which it has first made its nest, and as long as it can find a suitable spot it will continue to excavate new holes until the tree is *killed* by this process of boring. I have frequently counted as many as four holes in one tree, and in two instances I have seen as many as eight. These birds seem to know by instinct that the centre of the tree is rotten, or what lumber men call 'black-heart,' and they never make a mistake when selecting a tree! The hole is bored through the solid wood, generally a little upward, and to the center of the tree (which is always rotten), then downwards to the depth of 9 inches to a foot or more. This species lays from two to five eggs; generally three, rarely four, while five are exceptional. I have taken five eggs but once — on May 14, 1902. The earliest set taken was on April 27, 1884. Only one brood is raised, and these follow their parents during the months of July, August, and September. This Woodpecker is one of the most interesting birds we have. Its notes are harsh and discordant, and it is at all times very restless.

Ceophlœus pileatus. PILEATED WOODPECKER.— This fine woodpecker breeds regularly within a mile of my house every year. During the month of March, 1904, I made observations on a certain pair which had settled upon a dead pine as the place to excavate their hole. On March 21, the opening was commenced by the female, who drilled a small hole, and by degrees enlarged it until the hole was the size of a silver dollar. Both sexes assisted in the excavation, but the female, by far, doing most of the work. The size of the aperture was *not* increased until the shoulders of the bird was reached, when it was made a trifle larger. Every day I visited these birds in order to note the progress of their work, and being so accustomed to seeing me they were utterly fearless, as I could, at any time, approach the one excavating to within twenty feet, without hindering it in its work, although the hole was only about 30 feet from the ground. The hole was completed on April 21, and the first egg was laid the following morning. As incubation commences upon the advent of the first egg, and as the eggs are *not* laid consecutively, I did not again examine the contents of the nest until April 26,

when three eggs were found. Upon investigating the cavity on April 28, and finding but three eggs, I concluded that the set was complete and abstracted it. The excavation was made under a dead limb, and was about 18 inches deep, being hollowed out more on one side than on the other. This woodpecker is so attached to the tree in which it has first made its nest that it will continue to cling to it as long as it can find a suitable spot to excavate a new hole. It never uses the *same* hole after it has been once occupied. I know of a pair of these birds which resorted to the *same* tree for four consecutive years, and each year they excavated a *new* hole.

Another pair of these woodpeckers bred in a gigantic dead pine for three years, and as an illustration that these large holes are in great demand by other birds, and also mammals, for breeding purposes, I will state that on April 16, 1903, there were three species breeding in the *same* tree, namely — *Ceophlœus pileatus*, four eggs, 54 feet from ground; *Sciurus niger*, 70 feet from ground; and *Falco sparverius*,— approximately 90 feet from ground — all living together in perfect harmony! If this bird is deprived of its first set of eggs, it at once excavates a new hole, and the length of time consumed in its construction is about twenty-five days. A curious habit of this bird is that it frequently taps in its hole (as if excavating) even when it is incubating or brooding its young.

Chordeiles virginianus. NIGHTHAWK.— The greatest migration that I ever witnessed was of this species. On September 6, 1905, between 5.30 P. M. and sunset, these birds were migrating in dense flocks, which, at times, obscured the sky. As far as I have been able to ascertain these flocks extended over an area of more than fifteen miles from east to west. The number of birds seen must have represented *millions*. Mr. Ferdinand Gregorie, who plants on Daniel's Island, tells me that in every direction the air was filled with these valuable insectivorus birds.

The migration of Fox Sparrows (*Passerella iliaca*), that I witnessed on the morning of February 13, 1899, is insignificant in comparison to the above. (See 'The Auk,' April, 1899, p. 197.)

Spinus pinus. PINE SISKIN.— The winter of 1896 and 1897 will long be remembered on account of the great abundance of

these erratic birds. The first were observed on December 12, 1896, and many remained until the middle of March, 1897. Between these dates, many of the birds taken seemed to be in a state of perpetual moult. These birds were feeding upon the seeds of the sweet gum (*Liquidamber styraciflua*), and short-leaf pine (*Pinus mitis*).

Passerculus princeps. IPSWICH SPARROW.— Dr. Dwight states in his admirable monograph of this sparrow, p. 22, that "the yellow over the eye, acquired late in the spring moult, is equally intense in both sexes, although the individual intensity is variable," and in the "adult in autumn the superciliary line is ashy white or only faintly tinged with yellow." I have a specimen of this Sparrow, No. 4413, ♀ *ad.*, February 3, 1903, Cape Romain, S. C. (D. L. Taylor, collector), which has the superciliary stripe *very strongly* marked with canary yellow. The two central rectrices were being renewed, but they had not acquired their maximum length.

Ammodramus nelsoni subvirgatus. ACADIAN SPARROW.— The Acadian Sparrow is only absent on the coast from June 5 until October 10. These birds arrive in full autumnal plumage, but towards the last of October they begin to moult the feathers about the head and throat. This moult also occurs at or about the same time in all the *Ammodrami* that inhabit the salt marshes, viz: — *Ammodramus caudacutus, A. nelsoni, A. maritimus, A. m. fisheri, A. m. macgillivraii.* There is a complete moult in the spring of the above except *A. m. fisheri* and *A. m. macgillivraii.* The primaries, secondaries, and rectrices are also renewed. Audubon was well acquainted with this subspecies. In Vol. III, p. 109, of his 'Birds of America' he says: "Some shot on the 11th of December, in the neighborhood of Charleston in South Carolina, were so pale as almost to tempt one to pronounce them of a different species." A "subspecies," however, was unknown, in those days! Dr. Dwight's description of the song in Mr. Chapman's 'Birds of Eastern North America' is as perfect an imitation as one could write.

Ammodramus maritimus macgillivraii. MACGILLIVRAY'S SEASIDE SPARROW.— The type locality of this form is considered by all ornithologists to be Charleston (or vicinity), South Carolina.

Audubon, however, in his 'Orn. Biog.,' IV, 1838, p. 394, gives its range as including Louisiana and Texas; and in his 'Birds of America,' Vol. III, p. 107, he states that: "My friend Dr. Bachman informs me that none of these Finches remain in South Carolina during winter, and that they generally disappear early in November, when the weather is still very pleasant in the maritime portions of that State." My experience with this bird is exactly contrary to that of Dr. Bachman's, as it is most abundant (if such a word can be used) during the autumnal and *winter* months. Dr. Bachman may have referred to the *young*, which, however, have attained the plumage of the adult before the middle of November. *None* of these sparrows *breed* anywhere on the South Carolina coast; neither do *any* of the Seaside Sparrows; *macgillivraii*, however, must breed near at hand, as the young in first plumage occur during the second week in July, and the adult in worn breeding plumage are to be seen during the third week in July. There is a distinct northward migration which takes place about April 16, and continues until April 27, when they have all gone *north*, and of course to their breeding grounds wherever they may be.

A. m. fisheri also occurs on the South Carolina coast in company with *macgillivraii*, and I have taken numerous "typical" specimens (if the word 'typical' can be considered) in the autumnal months as well as during the *northward* migration. A 'typical' *fisheri* was taken on Oct. 27, 1893, and another *fisheri* was secured on April 16, 1901,— showing the southward as well as the northward migration.

My belief is that *A. m. peninsulæ et A. m. fisheri* are synonyms of *macgillivraii* Audubon; and that the forms known as *peninsulæ et fisheri* are merely variants of *macgillivraii*, as *peninsulæ* is not known to *breed* on the west coast of Florida, and *fisheri* occurs in South Carolina, in the autumnal and spring months and *must breed* to the northward of South Carolina, perhaps in North Carolina.

Mr. Brewster, in 'The Auk,' April, 1890, p. 212, says that the form he "found breeding in the salt marshes at St. Mary's, Georgia, in 1877, was unmistakably *maritimus*." Macgillivray's Sparrow is said to breed on Anastasia Island and at Matanzas Inlet, Florida. (Ridgway, 'Birds of N. and M. A.' p. 216.) It therefore *breeds*

to the *southward* of the breeding range of *maritimus*, and also with it on the North Carolina coast which is indeed an anomaly! *Macgillivraii* will have to supplant *peninsulæ et fisheri.*

Vireosylva olivacea. RED-EYED VIREO. — The controlling influence upon the migration of this bird in the autumn is the presence or absence of the seeds (fruit) of the magnolia (*Magnolia grandiflora*). The fruit of this beautiful tree begins to ripen during the first week of September, but the greater part ripens through October, and many seeds remain in the cones until November. The color is coral-red, and some specimens are about three-fourths of an inch in length, but the great majority average about half an inch. These seeds contain a large amount of oil, and when this vireo has been feeding upon them for any length of time it becomes very obese. There are many beautiful trees on this plantation, and I have often sat on the steps of the old Colonial house and watched these birds while feeding upon the fruit. The tree that has the most fruit attracts nearly all the vireos in a radius of perhaps a quarter of a mile, and I have often counted as many as fifty vireos in one tree. As long as the fruit is to be had, the vireos remain, but as soon as the supply becomes scarce or exhausted, the vireos depart.

The Kingbird (*Tyrannus tyrannus*), and Redstart (*Setophaga ruticilla*), also feed upon the fruit of the magnolia.

Telmatodytes palustris marianæ. MARIAN'S MARSH WREN, and **Telmatodytes palustris griseus.** WORTHINGTON'S MARSH WREN. — Mr. Outram Bangs, in 'The Auk,' October, 1902, p. 353, says that the range of *marianæ* is "Salt marshes of western Florida, non-migratory." I think that Mr. Bangs has overlooked my record, which was the first for the Atlantic coast (see 'The Auk,' October, 1899, p. 361). On October 1, 1898, I obtained a pair (♂ and ♀) which represent the extreme type of coloration, by having the breast heavily barred and spotted. I fail to understand why this bird has been reduced to a subspecies.

Worthington's Marsh Wren is *non-migratory*, as I have already pointed out in 'The Auk,' October, 1899, p. 362. It is still an excessively rare bird and has never recovered from the losses it sustained by the great cyclone of August 27–28, 1893. When in *full adult* plumage this wren is unmistakable — being a *gray*

bird. There is no evidence that *griseus* interbreeds with *marianæ*, and I think it should be give full specific rank. The breeding range of *griseus* extends along the South Carolina coast as far north as the mouth of the Santee River. A glance at the map of South Carolina, will show that there are no salt marshes of any extent from Georgetown to Southport, N. C., in which this wren could breed.

THE FEATHER TRACTS OF SWIFTS AND HUMMINGBIRDS.

BY HUBERT LYMAN CLARK.

Plates II and III.

SOME years ago I undertook to obtain material for a study of the arrangement of the feather tracts in the Swifts and Hummingbirds. Through the kindness of the authorities of the United States National Museum, the alcoholic material in that collection was placed at my disposal, and was carefully examined. Later on, some beautiful hummingbird material from Arizona came into my possession through the efforts of Mr. R. D. Lusk, and in 1897, Mr. C. B. Taylor of Kingston, Jamaica, presented me with some very valuable specimens of both swifts and hummingbirds. In April, 1901, a brief statement appeared in 'The Auk' concerning the conclusions to which the study of this material had led me, and a more extended reference to them appeared in 'Science' for January 17, 1902. The preparation of the entire report, however, was continually postponed in the hope of obtaining more specimens, and in July, 1905, through the kindness of Dr. Witmer Stone, some alcoholic hummingbirds from Brazil were loaned me by the Academy of Natural Sciences of Philadelphia. As there is little

probability at present of securing in this country further material of importance, I have decided to delay no longer the publication of this account of the work that has been done and the conclusions reached.

It is an interesting fact that the pterylography of no group of birds has received so much attention as has that of the swifts and hummingbirds. The classic work of Nitzsch ('40) deals quite fully with the matter, so far as his material and methods allowed. Shufeldt ('88) has given a very full account of the pteryloses of both swifts and hummingbirds, making use however of Nitzsch's figures, which are, unfortunately, very inaccurate. Lucas ('92) has described the pterylosis of the hummingbirds in Ridgway's paper on that group, giving figures of the dorsal and ventral aspects of *Florisuga mellivora*. Thompson (:01) has described in full, and figured well, the pterylosis of *Patagona gigas*, compared it with both *Caprimulgus* and *Collocalia*, and given a figure of the dorsal aspect of the latter. His conclusions were criticised by me in 'Science' (January 17, 1902) and Shufeldt published a counter criticism in 'The Condor' (March–April, 1902), to which a brief reply was made in the next issue of the same journal (May–June, 1902). Discussion centers around the question whether the swifts and hummingbirds have essentially distinct and unique pteryloses or not, and to this question we shall return when we have completed an examination of the evidence in the case. The pterylography of the swifts will be considered first, a brief general description of the cypseline pterylosis being followed by a short account of each genus examined. The account of the hummingbirds follows in the same way, after which the two groups are compared, and final conclusions stated.

In this connection I wish to thank Mr. Lusk, Mr. Taylor, Mr. Stone, and especially Mr. F. A. Lucas, for the help they have given me in securing the needed material, without which nothing could have been done, and to Mr. Stone and Dr. J. A. Allen, I am indebted for assistance in nomenclature.

CYPSELI.

The general pterylosis of the swifts is very distinctive and remarkably uniform, so that the figures of *Chætura pelagica* (Plate II) will answer with slight changes for any of the other species. The tracts are all clearly defined and well feathered, while the apteria are uniformly naked. The forehead is quite thickly feathered, but with large crescent-shaped apteria over the eyes, while the crown and occiput are rather sparsely feathered, in longitudinal rows. The throat is fully feathered but there are apteria along the rami of the lower jaw. The upper cervical tract is very broad, and unites along the sides of the neck with the lower cervical tract, so that there are no lateral cervical apteria. Between the shoulders, it bifurcates to form the dorsal tract. On the anterior part of the neck, close to the head, is a large and very evident apterium, one of the most characteristic features of the pterylosis. It is a very curious fact that Shufeldt ('88 and :02) positively denies the existence of this apterium in the swifts, while Lucas ('92) states that "some of the swifts" possess it, and Thompson (:01) makes no reference to it in his description of *Collocalia*, though his figure shows an entire absence of feathers on the anterior dorsal part of the neck. A careful reëxamination of my material, figures and notes, leaves no doubt whatever of the existence of this apterium in every species of swift examined. I can only account for Shufeldt's statements by supposing that they are based on his examination of *Chætura pelagica* and *Aëronautes melanoleucus:* in *Chætura* this apterium is not very large, while in *Aëronautes* it is smaller than in any other swift. It is not inexplicable therefore that it was overlooked in these cases, but it is hard to see how it could have been overlooked in *Cypseloides*, which he also examined.— The dorsal tract is divided from the shoulders to the middle of the sacrum, by another long but narrow apterium, into two narrow bands of nearly uniform width, but it ends in a single narrow band at the base of the oil gland. The anterior portion of the space between the dorsal and humeral tracts is sometimes separated from the rest so as to form a small but quite distinct apterium on each side of the upper cervical tract. This is well shown in *Chæ-*

tura. The femoral tracts though diffuse, are very evident, and are usually long, so that they extend backward almost or quite to the tail-coverts, while anteriorly they reach downward and forward, often to the sternals and along the sides to the posterior end of the humerals. The latter tracts are narrow or of moderate width, passing over the humerus either at its head or near the middle, and are clearly connected with the feathering on the patagia of the wings and even with the upper cervical tract. The large oil gland is almost surrounded by a small tract, chiefly made up of the upper tail-coverts.

The lower cervical tract is forked quite far forward on the neck, and each half passes into a broad sternal tract which continues without interruption, though becoming narrower, to the belly, where it ends rather abruptly. In many swifts just at the point where these pterylæ leave the neck and pass on to the breast, an anteriorly divergent fork of the ventral apterium nearly severs them; this is most evident in *Chætura* and *Hemiprocne*. In some of the large swifts (*Hemiprocne, Cypseloides*) scattered feathers in the region of the furculum tend to unite the anterior ends of the 2 sternal tracts. There is nothing else peculiar or specially noteworthy in the ventral pterylosis, but the sternals are connected anteriorly over the shoulders with the humeral tracts and posteriorly, occasionally, with the femorals.

The characteristic and important features of this pterylosis may be summarized as follows: the presence of supraocular apteria, an upper cervical apterium, and a long and conspicuous spinal apterium, the absence of lateral cervical apteria, the large and diffuse femoral tracts, and the continuity and marked development of the lower cervical, sternal and ventral tracts. In addition to these features, the following points are noteworthy. Aftershafts are present on the contour feathers and are often very large. True down feathers are wanting and filoplumes are not notably abundant, though usually evident on the neck and the posterior part of the back. The oil gland never bears a terminal tuft of feathers. There are always 10 rectrices and 10 primaries. The alula consists of 2 or 3 feathers and in some cases there is also a distinct claw. The secondaries are usually 8 or 9 in number, and the wing quincubital, but in *Cypseloides, Hemiprocne* and *Macrop-*

teryx there are 10 or 11 secondaries and the wing is aquincubital. Except in *Macropteryx* and *Collocalia*, the skin on the hand is very dark, and this darkening extends in some cases not only along the forearm but nearly to the shoulder.

The above account of the cypseline pterylosis is based upon the examination of 15 swifts, representing 10 species and 8 genera. Nitzsch ('40) studied *Hemiprocne collaris* Temm., *H. acuta* (*Cyps. acutus* Pr. Max v. Neu Wied.) and *Cypselus apus;* Shufeldt ('88), *Chætura pelagica, Aëronautes melanoleucus,* and *Cypseloides niger;* and Thompson (:01), *Collocalia epodiopyga;* but so far as I know, the pterylosis has not been examined in any others of the Cypseli. The genera will now be considered in detail.

Macropteryx.

It is especially noteworthy that the pterylosis of this interesting genus does not differ in any essential point from that of *Chætura*. The nuchal apterium is present but is quite small, as the upper cervical tract is comparatively long and narrow. The femoral tracts are notably strong posteriorly. The legs are feathered about to the tarsal joint. The skin on the hand is not dark. The 10 rectrices, 10 primaries, 11 secondaries, and 3 alula feathers are not peculiar, but the wing is aquincubital.

Specimen examined.

No.	Name.	Collection.	Condition.
1	*Macropteryx coronata* (Tickell).	U. S. Nat. Museum.	Alcoholic; fair.

Collocalia.

The single specimen of this genus which I was able to examine was in poor condition, but the only points in which its pterylosis appeared to differ from that of *Chætura* is in the shape of the upper cervical tract, which is longer and narrower, and the nuchal apte-

rium, which is correspondingly narrow. The tarsus is feathered part way down in front. The skin on the hand is not specially dark. There are 10 rectrices, 10 primaries and 9 secondaries and the wing is quincubital. The alula consists of 2 feathers.

Specimen examined.

No.	Name.	Collection.	Condition.
1	*Collocalia* sp.?	U. S. Nat. Museum.	Alcoholic; poor.

Thompson (:01) has given a very detailed account of the pterylosis of the head and wing of *Collocalia* and a somewhat briefer description of that of the body. He has also figured the dorsal aspect of the plucked bird. So far as the head and wing are concerned, his figure and descriptions are very good, but it is necessary to take exception to his statements concerning the cervical and femoral tracts. He says that the dorsal tract "runs more than half way up the neck" but does not mention any connection with the pterylæ on the head, and his figure does not show any; either his specimen was peculiar and I must believe, abnormal, or else he has overlooked the real connection which exists. He also states that the "pectoral tracts are....separated from the feathering of the neck"; if that is correct, I must consider the specimen still more unique. The statement that there is "no well-defined femoral tract" is not so contradictory to his own figure and to what I have described above, as at first appears, for on page 324, he refers to a "lumbar" tract in *Collocalia*, which indicates that he there uses that term for what is, in this paper, called "femoral"; the word "lumbar" is not used elsewhere in his paper. It is greatly to be regretted that these discrepancies should occur between his paper and my observations. Further study of the pterylosis of this genus is very desirable.

Chætura.

(Plate II, Figs. 1–3.)

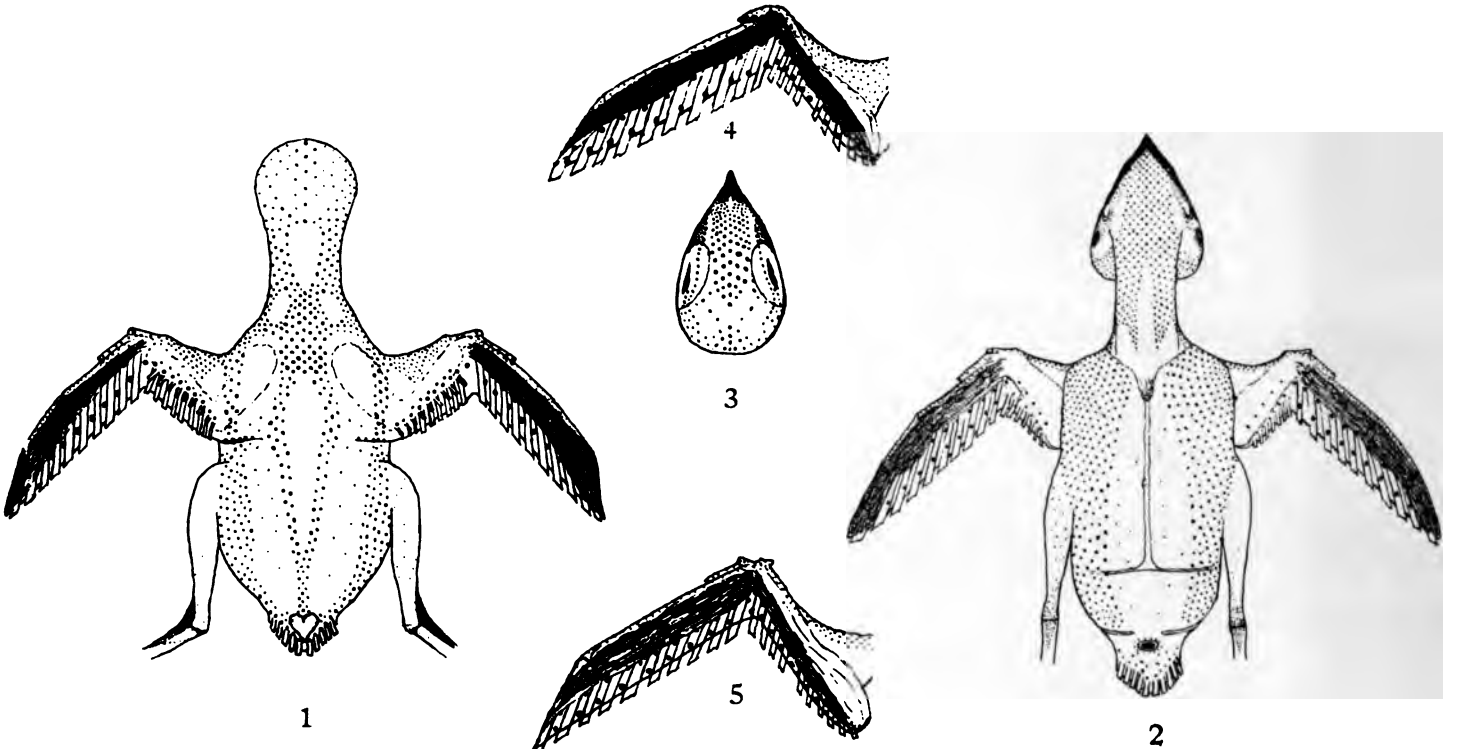
The general pterylosis is better shown by the figures given than by any amount of description. The humeral tracts are somewhat narrower than in some genera and less clearly connected with the femoral. The dorsal bands are unusually narrow, especially posteriorly. The legs are feathered to the tarsal joint. The skin on the hand is very dark, but not on the forearm. There are 10 rectrices, the first longest, the fifth shortest. Of the 10 primaries, the first is longest. There are 8 or 9 secondaries, but the first 6 are much longer than the others, and the ninth, when present is very small indeed. The wing is quincubital. The alula consists of 2 feathers.

Specimens examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Chætura pelagica* (Linn.).	——	U. S. Nat. Mus.	Alcoholic; fair.
2	" "	——	"	" "
3	" "	Amherst, Mass.	H. L. C.	" "
4	" "	Olivet, Mich.	"	" very good.

Hemiprocne.

The general pterylosis is essentially the same as in *Chætura*. The ventral cervical apterium is very well defined, and is separated from the great ventral apterium by numerous feathers in the region of the furculum. The femoral tracts are very broad and extend backward to the upper tail-coverts, but their anterior prolongation on the sides is not specially noticeable. The legs are feathered to the tarsal joint. The skin of the hand is very dark, but that of the forearm is lighter. There are 10 rectrices, of which the outer ones are longest and the middle pair shortest. Of the 10 primaries, the tenth is the longest and the others are successively shorter to the first. There are 10 secondaries and the wing is aquincubital. The alula consists of 3 feathers and a distinct claw.



CHÆTURA PELAGICA.

FIG. 1.— Dorsal view of the pterylosis. 2. Ventral view of the pterylosis. 3. Pterylosis of the crown and forehead.

CYPSELOIDES NIGER.

FIG. 4.— Dorsal view of the pterylosis of the wing. 5. Ventral view of the pterylosis of the wing.

All figures natural size.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Hemiprocne zonaris* (Linn.)	Jamaica.	U.S. Nat. Mus.	Alcoholic; very good

Nitzsch refers to the "lange, kräftige, dichtfiedrige" femorals, and to the width of the branches of the dorsal tract, "ziemlich breit" in *collaris*, "zweireihig fiedrig" or "einreihig" posteriorly in *acuta*. In both, he says, he found "sechszehn Schwingen," which is probably a mistake.

Cypseloides.

(Plate II, Figs. 4–5.)

The general pterylosis of this genus is not essentially different from that of *Chætura*, but the tracts are wider and more thickly feathered. The legs are feathered to the tarsal joint. The skin on the hand and forearm, and even on the upper arm, is very dark. There are 10 rectrices, 10 primaries, and 10 secondaries, and the wing is aquincubital. The alula consists of 3 feathers and a little claw.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Cypseloides niger* (Gmel.).	Jamaica.	U.S. Nat. Mus.	Alcoholic; very good.

Tachornis.

In this genus, the nuchal apterium is small, but otherwise the pterylosis is remarkably like *Chætura*. The legs are sparsely feathered to the very base of the toes in front, but the tarsus is bare behind. The skin on the hand is almost black, and the darkened color extends nearly to the shoulder. There are 8 rectrices and

10 primaries; of the latter, the ninth is the longest, and even the eighth is longer than the tenth. There are 10 secondaries, the wing is quincubital, and the alula consists of 2 feathers.

Specimens examined.

No.	Name.	Collection.	Condition.
1	*Tachornis parva* (Licht.).	U. S. Nat. Museum.	Alcoholic; fair.
2	" "	"	" good.

Aëronautes.

This genus is notable for the very small nuchal apterium but in other respects is very similar to *Chætura*. The legs are feathered in front to the base of the toes. The skin on the hand is very dark. There are 10 rectrices, and 10 primaries of which the ninth is longest. The wing is quincubital and has 9 secondaries and 3 feathers in the alula.

Specimens examined.

No.	Name.	Collection.	Condition.
1	*Aëronautes melanoleucus* (Baird)	U. S. Nat. Museum.	Alcoholic; good
2	" "	"	" "

Micropus.

The humeral tracts in this genus are somewhat peculiar, for in *melba* they seem to have a small horizontal branch on the inner side extending in towards the dorsal, while in *æquatorialis* and *streubeli*, they pass very nearly over the head of the humerus and thus are nearer the dorsal tract than in *Chætura*. In *melba*, the nuchal apterium is short and wide, but in the others is long and narrow. The legs are feathered to the toes in front, in *æquatorialis* and *streubeli*, but only about half way down the tarsus in *melba*. The skin on the hand is very dark but not on the forearm. Of

the 10 rectrices the middle pair is shortest, the outer ones longest; in *streubeli*, however, there is a sexual difference, for the tail is only a very little forked in the female, while in the male the fork is deep and the feathers narrowed. Of the 10 primaries, either the ninth or tenth may be longest. The quincubital wing has 8 or 9 secondaries and the alula is made up of 2 or 3 feathers.

Specimens examined.

No.	Name.	Collection.	Condition.
1	*Micropus melba* (Linn.).	U. S. Nat. Museum.	Alcoholic; good.
2	" *æquatorialis* (Müll.).	"	" "
3	" *caffer streubeli*(Hartl.)♂	"	" "
4	" " " ♀	"	" "

Cypselus.

Nitzsch describes and figures the pterylosis of *Cypselus apus*, but the arrangement of the feathers and tracts on the head and neck are certainly not as he shows it, unless we are to believe that this genus differs radically from all other known swifts. He says there are "achtzehn Schwingen," which is probably correct.

TROCHILI.

The hummingbirds are another group in which the pterylosis is remarkably uniform and quite distinctive, so that the figures given of *Trochilus alexandri* will answer with slight changes for any other species. The tracts are well defined and the apteria are perfectly bare. The head is not thickly or uniformly clothed but on the contrary the feathers tend to form longitudinal rows or narrow tracts with more or less definite apteria between. Thompson (:01) figures and describes admirably no less than 10 apteria on the head of *Patagona*, and other hummingbirds show the same general arrangement. Of these apteria, the most important are those to which he gives the names *frontal* and *supraocular*, both

being characteristic of the Trochili. The upper cervical tract is completely united on each side of the neck with the lower cervical for a considerable distance, so that there is a distinct lateral cervical tract for some little distance on the side of the neck, which ultimately divides to form the real cervicals. The conspicuous and characteristic nuchal apterium occupies the upper surface of the greater part of the neck. The humeral tracts are well defined, rather short, pass over the upper end of the humerus, and at their posterior end are usually very slightly connected by 2 or 3 feathers with the dorsal tract. The latter is very broad, covering most of the back, but contains a long and conspicuous spinal apterium. Posteriorly it unites more or less completely with the femoral tracts, though the latter are usually quite easily distinguished, as the feathers composing them are larger and stouter than those which connect them with the dorsal. The lower cervical tract is divided as far forward as the angle of the mouth, into two branches, which for a part of their length are united with the upper cervical, as already described. Each half passes backward, over the sides of the breast, as the sternal tract, which is wide and well developed; they terminate so abruptly just posterior to the margin of the sternum that there are practically no ventral tracts. Anteriorly the sternal tracts are connected over the shoulders with the feathering on the upper side of the wings and thus with the humerals.

The characteristic and important features of this pterylosis may be summarized as follows: the presence of frontal and supraocular apteria, a very large and conspicuous nuchal apterium, and a long and conspicuous spinal apterium, the absence of lateral cervical apteria, the small femorals noticeably connected with the dorsal, the well-marked sternals and practical absence of ventrals. In addition to these features, the following points are worthy of note. Aftershafts are present on the contour feathers though very weak. True down feathers are wanting and filoplumes are not notably abundant except on the neck and to a lesser extent on the back. The oil gland never bears a terminal tuft of feathers. There are always 10 rectrices and 10 primaries; of the latter, the tenth is the longest, the others successively shorter. The alula is usually wanting, though a single feather is sometimes present

indicating its position. The secondaries are usually 6, but not uncommonly 7, in number, and the wing seems to be generally aquincubital, though in several cases examined it was clearly quincubital. In one instance one wing had 6 secondaries and was clearly aquincubital as in *Patagona*, while the other wing had 7 secondaries and was as certainly quincubital. Apparently this point in wing structure is no longer of significance in the hummingbirds. The skin on the hand is often very dark, and this color extends more or less markedly onto the forearm.

This account of the trochiline pterylosis is based on the careful examination of 31 hummingbirds, representing 17 species and 15 genera, and on Thompson's (:01) very valuable study of *Patagona gigas*, Nitzsch's ('40) figure and description of *Chrysolampis moschitus*, Shufeldt's ('88) account of *Selasphorus platycercus*, and Lucas's ('92) figure and brief description of *Florisuga mellivora*. So far as I know, no other hummingbirds have ever been examined pterylographically. The various genera will now be considered in detail.

Campylopterus.

Reference is made to this genus only because Lucas ('92) states that the skin of the hand is "colored black" as in the swifts and some other hummers.

Florisuga.

The single specimen examined showed no peculiarities, except that there were apparently only 9 primaries, doubtless accidental or an abnormal condition. The skin on the hand is black.

Specimen examined.

No.	Name.	Collection.	Condition.
1	*Florisuga mellivora* (Linn.)	U. S. Nat. Museum.	Alcoholic; very poor.

The figure and description of this genus given by Lucas ('92) are fairly good, though I find no tendency in the sternal tracts to

connect with each other near the furculum, either in *Florisuga* or any other hummer, as indicated in Lucas's figure. Moreover the head and wing are too closely feathered, and the humeral tracts are not well enough defined. Incidentally, I wish to dissent strongly from Lucas's statements as to the reasons for the existence of the various apteria.

Patagona.

The pterylosis of this genus, so admirably figured and described by Thompson (:01), deserves special mention because of the presence of 7 secondaries in the aquincubital wing, and of a "lateral tract" just outside of the sternal tract. This small tract occurs in no other genus of Trochili, so far as I know, but a similar tract occurs in *Todus*, according to Nitzsch's figure. It would be interesting to know if the tract has any special significance in *Patagona* or is composed of feathers in any way peculiar, or different from those which make up the sternals.

Argyrtria.

There is nothing exceptional or worthy of note in this genus, except that the formula for the length of the rectrices is 3–2–4–1–5.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Argyrtria brevirostris* (Less.).	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic; fair.

Eucephala.

The general pterylosis is like that of *Trochilus alexandri*. There are 6 secondaries in the right wing, with 7 major coverts, and the wing is clearly aquincubital, but in the left wing there are 7 well developed secondaries, of nearly equal size, and only 7 major coverts, the wing being perfectly quincubital. The tail is slightly

forked, the middle pair of rectrices being shortest and the outer pair longest. The legs are feathered just over the tarsal joint.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Eucephala cæruleo-larvata* (Gould).	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic; poor.

Thalurania.

There is nothing to be said of this genus to distinguish its pterylography from other hummingbirds. The tail is deeply forked, the outer feathers being much the longest.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Thalurania sp.?*	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic; good.

Lampornis.

In this genus, the secondaries are 6 or 7, but the wing is clearly aquincubital. The skin on the hand, and even on the forearm, is very dark. In the specimens examined the rectrices were 2–1–3–4–5 in one, and 4–5–3–2–1 in the other.

Specimens examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Lampornis violicauda* (Bodd.).	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic; good.
2	" "	"	"	" very poor.

Chrysolampis.

In his account of *Trochilus moschitus* Nitzsch ('40) refers to the small aftershaft, the absence of down, the broad, rhombic form of the dorsal tract, the long and rather broad spinal apterium, the slight development of the femoral tracts, the nuchal apterium, and the large oil gland. The figure given (Plate III, fig. 19) was probably prepared from a skin and is seriously defective in its representation of the tracts and spaces on the head, neck, and posterior part of the back.

Leucochloris.

There is nothing specially noteworthy about this genus, except that in both specimens the right wing had 7 secondaries and the left 6, but all four wings were clearly aquincubital. In one specimen the formula for the rectrices is 1–2–3–4–5 and in the other it is 3–2–1–4–5.

Specimens examined.

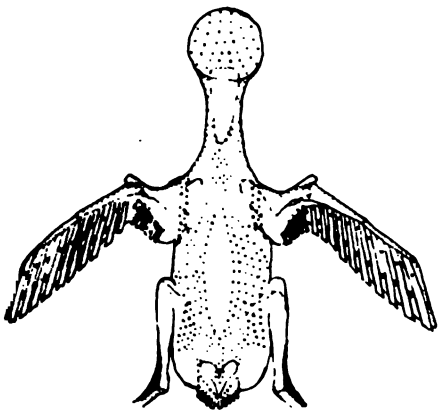
No.	Name.	Locality.	Collection.	Condition.
1	*Leucochloris albicollis* (Vieill.).	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic; good.
2	" "	"	"	"

Eugenes.

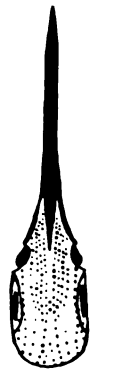
The pterylosis of this genus is exactly like *Calligena*. There are 6 or 7 secondaries and the formula for the rectrices is 5–4–3–2–1 in the male and 4 3 2 1 5 in the female.

Specimens examined.

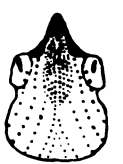
No	Name.	Sex	Locality.	Collection	Condition.
1	*Eugenes fulgens* (Swains.).	♂	Arizona	H. L. C.	Alcoholic; very good.
2	" "	♀	"	"	"



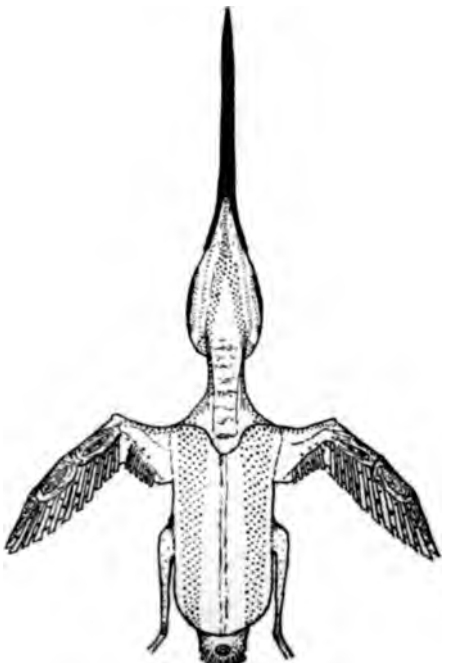
1



3



4



2

TROCHILUS ALEXANDRI.

FIG. 1. Dorsal view of the pterylosis. Nat. size. 2. Ventral view of the pterylosis. Nat. size. 3. Pterylosis of the crown and forehead. Nat. size.

MELLISUGA MINIMA.

FIG. 4. Pterylosis of the crown and forehead of a nestling, about 3 days old. × 2.

Cœligena.

In this genus the head is more sparsely feathered than in *Patagona*, with the lines of feathers very clear, the occipital apterium is very distinct, the frontal apterium is very long, and the humeral tract is clearly connected with the dorsal. The secondaries are 6 or 7, the wing is aquincubital, and the formula for the rectrices is 4–3–2–5–1.

Specimens examined.

No.	Name.	Sex.	Locality.	Collection.	Condition.
1	*Cœligena clementiæ* (Less.).	♂	Arizona.	H. L. C.	Alcoholic; very good.
2	" "		"	"	" "

Trochilus.

(Plate III, Figs. 1–3.)

The pterylosis of this genus is clearly shown in the figures given, and is an excellent example of the trochiline condition. The feet are feathered to the tarsal joint. There are 6 secondaries and the wing is aquincubital.

Specimens examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Trochilus alexandri* Bourc. & Muls.	——	U. S. Nat. Mus.	Alcoholic; good.
2	" "	——	"	" "
3	" "	Arizona.	H. L. C.	" very good.
4	" "	"	"	" "

Calypte.

The pterylosis of this genus shows no peculiarities whatever, nor is there anything noteworthy in the details, concerning the primaries, secondaries, alula and rectrices.

Specimen examined.

No.	Name.	Collection.	Condition.
1	*Calypte anna* (Less.).	U. S. Nat. Museum.	Alcoholic; fair.

Selasphorus.

In this genus, the femoral tracts are extended further backwards and downwards than in most hummingbirds, so that there is a slight connection between them and the group of under tail coverts. The legs are feathered to the tarsal joint. There are 6 secondaries, and the wing is probably normally aquincubital. Of the 10 rectrices, the first is longest and fifth shortest in the male, while in the female of *platycercus* the formula is 2-3-1-4-5.

Specimens examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Selasphorus rufus* (Gmel.).	———	U. S. Nat. Mus.	Alcoholic; good.
2	" "	———	"	" "
3	" "	———	"	" "
4	" *platycercus* (Swains.).	Arizona.	H. L. C.	" very good.
5	" "	"	"	" "

Mellisuga.

(Plate III, Fig. 4.)

Although no adults were examined, there is no indication in the nestlings that the pterylosis differs from that of *Trochilus*. Even in the embryos, the characteristic features of the pterylosis are evident. In the nestlings, the feathering of the head shows some peculiarities, which are illustrated in the figure given.

Specimens examined.

No.	Name.	Age.	Locality.	Collection.	Condition.
1	*Mellisuga minima* (Linn.).	Embryo,	Jamaica.	H. L. C.	Alcoholic: good.
2	" "	"	"	"	" "
3	" "	Nestling.	"	"	" very good.
4	" "	"	"	"	" "

Orthorhynchus.

There is nothing specially noteworthy with reference to this genus, for even in details it agrees with *Trochilus*. Of the 10 rectrices, the first is longest, the fifth shortest.

Specimens examined.

No.	Name.	Collection.	Condition.
1	*Orthorhynchus exilis* (Gmel.).	U. S. Nat. Museum.	Alcoholic; good.
2	" "	"	" "
3	" "	"	" "

Stephanoxys.

The long plume on the head is located in the group of feathers between the frontal and occipital apteria and its "pit" is very conspicuous in the plucked bird. There is nothing specially peculiar in the general pterylosis, but one wing is apparently quincubital. The tail formula is 2–1–3–4–5. The feet are feathered just over the tarsal joint, and the skin on the hand along the upper anterior edge, and even on the forearm is very dark.

Specimen examined.

No.	Name.	Locality.	Collection.	Condition.
1	*Stephanoxys delalandii* (Vieill.):	Brazil.	Phil. Acad. Nat. Sci.	Alcoholic: good.

Genus unknown.

An unidentified hummingbird (No. 23493 U. S. Nat. Mus.) shows a pterylosis exactly like the others, and is mentioned here simply to complete the list of those examined.

COMPARISON OF THE TWO GROUPS.

Before entering on a detailed comparison of the two groups which we have been examining, it will set some of the facts more clearly before us if we arrange them in tabular form.

	Cypseli.	Trochili.
No. of primaries	10	10
The three longest	10–9–8	10–9–8
No. of feathers in alula	2–3	0–1
Aftershaft	Present	Present
Condition of oil-gland	Bare	Bare
True down	Wanting	Wanting
Condition of wing	Either aquincubital or quincubital.	Usually aquincubital.
No. of secondaries	8–11	6–7
No. of rectrices	10	10
Frontal apterium	Wanting	Present
Occipital "	Indistinct	"
Supraocular "	Present	"
Nuchal "	"	"
Spinal "	"	"
Lateral-cervical "	Wanting	Wanting
Femoral tracts	Large, separate from dorsal	Small, connected with dorsal
Skin of hand	Usually very dark	Often very dark

It will readily be seen from the table and the foregoing accounts of the two groups that the points of difference between swifts and hummingbirds are comparatively few, and the important matter to determine is whether these differences are trivial or not. These points are the presence of frontal and occipital apteria in Trochili, their virtual lack of an alula, their small number of secondaries, their very broad, diamond-shaped dorsal tract and its practical union with the femorals, and their almost complete lack of ventral tracts. Let us consider these points under the three following heads, (1) pterylosis of head and neck; (2) pterylosis of wings; (3) pterylosis of trunk and legs.

Pterylosis of the Head and Neck.— In all birds, the distribution of the feathers on the head seems to be more liable to variation than on any other part of the body; among the Caprimulgi, for example, we find that the different genera exhibit quite a notable diversity in the pterylosis of the head. When we consider therefore how the whole head of the hummingbird has been altered for its peculiar feeding habits, and how the plumage of the head has been modified in connection with the development of the gorgeous metallic colors, we should expect a characteristic pterylosis. When on the other hand, we consider how nearly in the opposite direction the modification of the swift's head has been, and that there is no development of a peculiar head plumage, it is not strange that there are some differences in the arrangement of the feathers of the head and neck between hummingbirds and swifts. That these differences are due to the modification of the trochiline head in connection with feeding habits is certainly suggested, if not demonstrated, by the pterylosis of the nestling hummingbird. A comparison of figure 4, plate III, with figure 3, plate II, certainly suggests a real resemblance between the two. The long, narrow frontal apterium shown by all adult hummingbirds, is almost wanting in the nestling, as it is in swifts, while the sparse feathering of the occipital region is quite as evident in *Chætura* as in *Mellisuga*. On the other hand, the nestling shows clearly the supraocular and nuchal apteria, and the absence of lateral cervical apteria which are such characteristic features of both swifts and hummers. It is a natural conclusion therefore, that the fundamental plan of the pterylosis of head and neck was originally similar, if not identical, in the Cypseli and Trochili.

Pterylosis of the Wings.— The general arrangement of the remiges and coverts of the wing is quite similar in the two groups under consideration, and such differences as occur are closely associated with the size of the bird. Thus we know that, as a rule, the smaller the bird, the fewer will be the secondaries, lesser coverts and alula feathers, and this is well shown by the swifts and hummingbirds. As regards the quincubital or aquincubital condition of the wing there is no constant difference between the two groups, for, as already shown, individual humningbirds show variability on this point, and neither condition is characteristic

of the swifts, as a whole. A comparison of figures 4 and 5 of plate II, with the wings of *Chætura* and *Trochilus*, will emphasize how really intermediate between the two swifts, in this point, the hummingbird is. There is no essential difference in the humeral tracts, though those of the swifts are more obviously connected with the dorsal and femoral tracts, than are those of the Trochili.

Pterylosis of the Body.— In the form of the dorsal tract swifts and hummingbirds differ. In the latter it broadens on the middle of the back, extending downward to the sides, and then narrowing again to a point at the oil gland; were it not for its obvious connection with the femoral tracts on each side, it would thus be an almost perfect diamond in shape. In the swifts, on the contrary, the tract does not extend downward on the sides nor does it directly connect with the femorals; its shape therefore is that of an elongated ellipse. In each case, however, there is the well marked spinal apterium, a very important point of resemblance. In the swifts, the femoral tracts are well developed, extend forward on the sides to the posterior part of the humerals, and backwards to connect with the upper tail-coverts. In the hummingbirds, however, the femorals are weak and only extend towards the dorsal with which they connect. It is evident therefore, that in the swifts the dorsal tract has become quite sharply defined, and the femorals extended to form a part of the covering for the sides, while in the hummingbirds the dorsal tract remains more extensive, has not become separated from the femorals, and provides all the covering for the sides. Thus the dorsal pterylosis of the swifts indicates a greater specialization than that of the hummingbirds, possibly associated with their extraordinary power of flight. The ventral pterylosis of the Cypseli is essentially identical with that of the Trochili, for the apparent absence of ventral tracts in the latter is a difference of degree, not of kind, while the separation of a lower cervical apterium from the ventral, in some swifts, is also an unimportant character, present in only a few species.

CONCLUSIONS.

In bringing to a close this account of the pterylography of swifts and hummingbirds, it is worth while to consider two general ques-

tions, still open to discussion, which may be stated as follows: Is the pterylosis of a swift sufficiently similar to that of a hummingbird to give support to the view that they have a common ancestry? If so, is that of the Caprimulgi sufficiently similar to warrant the belief that they also have the same ancestry? There are some other interesting questions which arise in connection with these, particularly as to whether the swifts and swallows have anything in common and as to what birds are most nearly allied to the groups considered in this paper. But lack of sufficient reliable evidence forbids any attempt to touch on such questions. Let us turn to those first stated: 1. *Is the pterylosis of a swift sufficiently similar to that of a hummingbird to give support to the view that they have a common ancestry?*

In the judgment of the writer, YES. What may properly be called the fundamental plan of the pterylosis is essentially the same. That is to say, each group has apparently sprung from an ancestor in which the head was fairly uniformly, though sparsely feathered except for an apterium over the eye; the neck had the upper and lower cervical tracts united anteriorly, so that there was no lateral cervical apterium; there was a conspicuous nuchal apterium; the back was well covered by a broad dorsal tract containing an elongated spinal apterium; but not fully distinct from the femoral tracts or even from the humerals; the lower cervical tract was deeply forked and continuous with the conspicuous sternal tracts; and the latter were separate from each other, and extended on to the belly as short, wide, ventral tracts. As regards the dorsal tract, it seems to me probable that this ancestral form was a bird in which the humeral, dorsal, and femoral tracts were more or less connected, and the two latter at least not sharply defined, somewhat as Nitzsch figures the dorsal surface of *Colius;* this condition was followed by such a pterylosis as Nitzsch shows for *Cuculus,* in which the spinal apterium has appeared; from this arrangement the dorsal tract of the hummingbird would arise with little change, while the cypseline condition would follow further condensation of the dorsal tract, accompanied by development of the femorals. In addition to this agreement in fundamental plan, the swifts and hummingbirds have so many details, of more or less importance, in common, we may say further of their ancestral form that it had 10 primaries with the 3 outermost

longest, and 10 rectrices; probably 9 secondaries, an alula of 3 feathers, an aftershaft on the contour feathers, no down feathers, filoplumes rather few and mainly confined to the neck and back, the feet feathered to the tarsal joint, the oil gland without a terminal tuft of feathers, and the skin on the hand dark colored. Whether the wing was originally aquincubital or not is open to question but judging from the wings of the hummingbirds examined, the evidence would seem to favor the view that the quincubital condition of most of the swifts is a specialized condition, and the ancestral form was probably aquincubital.

In the subsequent development of the Cypseli and Trochili, the pterylosis of the head and neck became more specialized in the latter group, while that of the back has been more modified in the swifts; with the wings, specialization has occurred in both groups, perhaps to a greater extent in Trochili, which have lost the alula, and 2 or 3 secondaries, and are apparently approaching the quincubital condition. Shufeldt ('88) in attempting to show the absence of relationship between swifts and hummingbirds lays much stress on the difference in the number of secondaries, the form of the dorsal tract, the absence of supraocular and nuchal apteria in swifts and the absence of femoral tracts and of black skin on the hand in hummingbirds. As has been repeatedly shown in the previous pages, his position is clearly based on insufficient or unreliable evidence; the number of secondaries is almost wholly a matter of size, the form of the dorsal tract is a real difference but not inexplicable, the supraocular and nuchal apteria are *not* absent in swifts, and the femoral tracts and black skin on the hand are *not* wanting in hummingbirds.

2. *Is the pterylosis of the Caprimulgi sufficiently similar to that of swifts or hummingbirds to give support to the view that they have a common ancestry with either?*

In the judgment of the writer, NO. Although the linear arrangement of the feathers on the head of the *Caprimulgi* (see Clark, '94) seems at first somewhat similar to that in *Patagona* (see Thompson, :01) the more the pteryloses of the two groups are compared, the more evident it seems that there is no indication of a common fundamental plan in the two. The upper cervical tract in the Caprimulgi is quite narrow with no trace of a nuchal apterium,

and is more or less separate from the dorsal tract; the lower cervical is also narrow and not divided so far up on the throat as even in the swifts. Lateral cervical apteria are very evident. The dorsal tract of the Caprimulgi is clearly derived from an ancestral form in which the anterior and posterior portions were not equally well developed; moreover the spinal apterium is not long and narrow, but short and wide, with sharp lateral angles. Probably the caprimulgine form is derived from such a condition as is shown in Nitzsch's figure of *Falco brachypterus*, rather than from a form like that of *Cuculus*. The humeral tracts in Cypseli and Trochili are near the dorsal and there are some feathers connecting them therewith, but in Caprimulgi the humerals are narrow and distinct, at some distance from the dorsal. The form and position of the femoral tracts is clearly different in the Caprimulgi from those in the Cypseli and Trochili, and the marked contraction of the sternal tracts to form the ventrals is a minor characteristic of the Caprimulgi. Some of the details in which the Cypseli and Trochili agree are not the same in the Caprimulgi, as for example, the black skin on the hand and the last three primaries being the longest; the development of the alula and the presence of 12 or more secondaries in Caprimulgi may also be mentioned, though no weight should be attached to such differences taken by themselves.

BIBLIOGRAPHY.

'40. NITZSCH, C. L.— System der Pterylographie.

'88. SHUFELDT, R. W. — Studies of the Macrochires, etc.— Jour. Linn. Soc., Zool., Vol. XX., pp. 299-394.

'92. LUCAS, F. A. — Pterylosis (of Trochilidæ) in R. Ridgway's The Humming Birds.— Rep. U. S. Nat. Mus. for 1890, p. 290.

'94. CLARK, H. L.— The Pterylography of Certain American Goatsuckers and Owls.— Proc. U. S. Nat. Mus., Vol. XVII, pp. 551-572.

:01. —— The Pterylosis of Podargus: with notes on the Pterylography of the Caprimulgi.— Auk, Vol. XVIII, pp. 167-171.

:01. THOMPSON, D'ARCY, W.— On the Pterylosis of the Giant Humming-Bird (*Patagona gigas*).— Proc. Zoöl. Soc. London, 1901, pp. 311-324.

:02. CLARK, H. L.— Are Humming Birds Cypseloid or Caprimulgoid?— Science, N. S., Vol. XV, No. 368, p. 108.

:02. SHUFELDT, R. W.— Pterylosis of Humming Birds and Swifts.— Condor, Vol. IV, No. 2, p. 47.

:02. CLARK, H. L.— Communication.— Condor, Vol. IV, No. 3, p. 75.

TWENTY-THIRD CONGRESS OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE TWENTY-THIRD CONGRESS of the American Ornithologists' Union convened in New York City, Monday evening, November 13, 1905. The business meeting, and public sessions, November 14, 15 and 16, were held at the American Museum of Natural History, and the final session, Thursday afternoon, at the Brooklyn Institute of Arts and Sciences.

BUSINESS SESSION.— The meeting was called to order by Vice-President Batchelder, in the absence of the President, Mr. Charles B. Cory. Sixteen Fellows were present. The Secretary's report gave the membership of the Union at the opening of the present Congress as 860, constituted as follows: Fellows, 45; Honorary Fellows, 18; Corresponding Fellows, 65; Members, 71; Associates, 661.

During the year the Union lost fifty-eight members, five by death, twenty-seven by resignation, and twenty-six for non-payment of dues. The deceased members were: Walter E. Bryant,[1] a Corresponding Fellow, who died in San Francisco, Calif., May 21, 1905, aged 44 years; Dr. Sylvester D. Judd, a Member, who died Oct. 22, 1905, at the age of 34; Charles E. Bailey, of North Billerica, Mass., Dr. Mortimer Jesurun, of Douglas, Wyoming, and John C. Knox, of Auburn, N. Y., Associates.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition, much better than ever before.

Charles F. Batchelder was elected President; E. W. Nelson and Frank M. Chapman, Vice-Presidents; John H. Sage, Secretary; Jonathan Dwight, Jr., Treasurer; Ruthven Deane, A. K. Fisher, Thos. S. Roberts, Witmer Stone, William Dutcher, Chas. W. Richmond, and F. A. Lucas, members of the Council.

Walter K. Fisher, of Palo Alto, Calif.; Lynds Jones, of Oberlin, Ohio; and Wilfred H. Osgood, of Washington, D. C., were elected Fellows. Dr. Chas. W. Townsend, of Boston, Mass.; John E. Thayer, of Lancaster, Mass.; Rev. Wm. Leon Dawson, of Seattle,

[1] For an obituary notice, see Auk, XXII, pp. 439–441.

Wash.; James H. Riley, of Washington, D. C.; and Austin H. Clark, of Boston, Mass., were elected to the class of Members, and the following seventy-one persons were elected Associates, namely:

John A. Aiken, Greenfield, Mass.; William B. Allison, New Orleans, La.; Mrs. Bennet F. Ball, Oakville, Conn.; Edwin Beaupre, Kingston, Ontario; Henry F. Blount, Washington, D. C.; Allen Bourn, Yonkers, N. Y.; Mrs. Mary G. Bowman, Springfield, Mass.; Courtenay Brandreth, Ossining, N. Y.; M. C. Buffum, Newport, R. I.; Thos. L. Burney, Lynn, Mass.; Mrs. John H. Cady, Providence, R. I.; Mrs. Robert Campbell, Jackson, Mich.; J. M. Carroll, Waco, Texas; James P. Catlin, Ottawa, Ill.; Dr. E. A. Chapman, New York City; Emily L. Clark, St. Johnsbury, Vt.; Susan E. Clark, St. Johnsbury, Vt.; Lucy V. Baxter Coffin, Chicago, Ill.; F. M. David, Damariscotta, Me.; Samuel S. Dickey, Waynesburg, Pa.; E. A. Doolittle, Painesville, Ohio; Henry L. Douglas, Brockton, Mass.; Alexander D. DuBois, Chicago, Ill.; W. L. R. Emmet, Schenectady, N. Y.; A. H. Gallup, Ottawa, Ont.; Earle R. Greene, Atlanta, Ga.; Mrs. C. B. Graves, New London, Conn.; Campbell Hamilton, Brooklyn, N. Y.; Mrs. Henry W. Hardon, New York City; John H. Hardy, Jr., Arlington, Mass.; Miss Helen P. Haskell, Alton, Ill.; Ashton E. Hemphill, Holyoke, Mass.; Harold Herrick, New York City; Alfred C. Hill, Belmont, Mass.; Isabel B. Holbrook, Rockland, Mass.; Bruce Horsfall, Red Bank, N. J.; Chas. F. Jenney, Boston, Mass.; Geo. H. Kent, Suffolk, Miss.; Mrs. Henry A. Knapp, Scranton, Pa.; Dr. Victor Kutchen, Dartford, Wis.; A. Lechasseur, Trois-Pistoles, Quebec; Louis E. Legge, Portland, Me.; Mark W. Maclay, Jr., New York City; Nell K. McElhone, New York City; Miss Emily McNeil, Cromwell, Conn.; Henry F. Merriam, Summit, N. J.; W. B. Mershon, Saginaw, Mich.; Miss Elizabeth Putnam Moore, New York City; Franklin H. Mosher, Wakefield, Mass.; Robert C. Murphy, Mt. Sinai, N. Y.; Mrs. Harry A. Noyes, Hyde Park, Vt.; Geo. P. Perry, Sterling, Ill.; Mrs. Rose A. Pickering, Middletown, Ind.; Mrs. Wallace Radcliffe, Washington, D. C.; John A. Remick, Jr., Boston, Mass.; H. S. Reeside, Washington, D. C.; Harriet Richardson, Washington, D. C.; Harrison Sanford, New York City; Harry C. Sargent, Newton, Mass.; Carleton Schaller, New York City; A. R. Shearer, Mount Belvieu, Texas; Charles Sheldon, New York City; Watson Snyder, Newark, N. J.; Loring T. Swain, Cambridge, Mass.; Roy Thompson, Cando, N. Dak.; Miss Anna J. Valentine, Bellefonte, Pa.; Arthur T. Wayne, Mt. Pleasant, S. C.; Louis Wessel, Butte, Mont.; Dr. Emma D. Wilcox, New York City; Miss Florence A. Wyckoff, Elmira, N. Y.; and Walter R. Zappey, Roslindale, Mass.

Drs. Allen, Dwight, Merriam and Richmond, and Messrs. Brewster, Ridgway and Stone, were reelected 'Committee on Classification and Nomenclature of North American Birds.' This

Committee was empowered to prepare a new edition of the Check-List for publication as soon as practicable.

PUBLIC SESSION. *First Day.*— The meeting was called to order by the President, Mr. Batchelder. An address of welcome was made by Prof. H. C. Bumpus on behalf of the President and Trustees of the American Museum of Natural History.

The papers read during the morning session were as follows:

'Some Unpublished Letters of Wilson and some Unstudied Works of Audubon,' by Witmer Stone. Remarks followed by Dr. Allen, and the author.

'The Evolution of Species through Climatic Conditions,' by Dr. J. A. Allen. Remarks followed by Dr. Bishop, Rev. H. K. Job, Messrs. Chapman, Elliot and Bent, and the author.

'Summer Birds of the Mt. Marcy Region in the Adirondacks,' by Elon H. Eaton. Remarks followed by Dr. Fisher.

'Pelican Island Revisited,' by Frank M. Chapman. Illustrated by lantern slides.

The papers of the afternoon were:

'Some Breeding Warblers of Demarest, N. J.,' by B. S. Bowdish. Illustrated by lantern slides. Remarks followed by Mr. Chubb, and the Chair.

'Notes on Wing Movements in Bird Flight,' by William L. Finley. Illustrated by lantern slides. Remarks followed by Dr. Palmer.

'The Status of Certain Species and Subspecies of North American Birds,' by Jonathan Dwight, Jr. Remarks followed by Messrs. Oberholser, Lucas, Elliot, and Dr. Allen.

'Wild-fowl Nurseries of Northwest Canada,' by Rev. H. K. Job. Illustrated by lantern slides.

In the evening the members of the Union, and their friends, met at dinner at the Hotel Endicott. After the dinner an informal reception was held at the American Museum of Natural History, with an exhibition of a new projection apparatus.

Second Day.— The meeting was called to order by the President. The papers read during the morning session were:

'Andreæ Hesselius, a Pioneer Delaware Ornithologist,' by C. J. Pennock.

'The Probability of Error in Bird Migration Records,' by Witmer

Stone. Remarks followed by Prof. Cooke, Dr. Fisher, and the author.

'Some Observations on the Applicability of the Mutation Theory to Birds,' by Witmer Stone. Remarks followed by Drs. Allen and Bishop, Messrs. Oberholser, Brewster and Fuertes, and the Chair.

'The Song of the Hermit Thrush,' by Henry Oldys. Remarks followed by Mr. Fuertes.

'Impressions of English Bird-Life,' by Frank M. Chapman. Illustrated by lantern slides.

The papers of the afternoon were:

'Similarity of the Birds of the Maine Woods and the Pocono Mountains, Pa.,' by William L. Baily, followed by an 'Exhibition of Lantern Slides' by the same author.

'Discontinuous Breeding Ranges,' by Prof. Wells W. Cooke. Illustrated by lantern slides.

'The Principles of the Disguising Coloration of Animals,' by Abbott H. Thayer. Illustrated with experiments and slides. Remarks followed by Mr. Eaton and the author.

The Chair announced that the afternoon session the following day would be held in the Museum of the Brooklyn Institute of Arts and Sciences.

Third Day.— The meeting was called to order by the President.

The following Committees were appointed by the Chair: 'Revision of the A. O. U. Code,' Dr. J. A. Allen, Chairman, Dr. Theo. N. Gill, H. W. Henshaw, H. C. Oberholser, W. H. Osgood, Dr. C. W. Richmond and Witmer Stone. 'Bird Protection,' Dr. A. K. Fisher, Chairman, D. G. Elliot, Dr. T. S. Roberts, E. W. Nelson, and Dr. C. W. Richmond.

The papers of the morning were:

'The Collection of Birds in the New York Zoölogical Park,' by C. William Beebe.

'A Contribution to the Natural History of the English Cuckoo, with a review of the Literature on the Subject,' by Dr. Montague R. Leverson.

'Plumages and Status of the White-winged Gulls of the Genus *Larus*,' by Dr. Jonathan Dwight, Jr.

'A Contribution to the Ornithology of South Carolina, pertaining chiefly to the Coast Region,' by Arthur T. Wayne. In the

absence of the author the paper was read by Mr. William Brewster.

'Should Bird Protection Laws and their Enforcement be in the hands of the National Government?' by Otto Widmann. Read by Dr. Palmer, in the absence of the author.

'A Lapland Longspur Tragedy,' by Dr. Thos. S. Roberts. Illustrated by lantern slides. Remarks followed by Drs. Fisher and Bishop.

The afternoon, and final, session was held at the Brooklyn Institute of Arts and Sciences, with Frederic A. Lucas, Curator-in-Chief of the Museum of the Brooklyn Institute, Chairman. On behalf of the Trustees he welcomed the Union to the Institute.

The papers read were:

'The Hoatzin and other South American Birds' (with exhibition of specimens), by George K. Cherrie. Remarks followed by Messrs. Dutcher, Beebe, Fuertes, the author, and the Chair.

'Among the Water Birds of Southern Oregon,' by William L. Finley. Illustrated by lantern slides. Remarks followed by Drs. Bishop and Fisher, Rev. H. K. Job, Messrs. Dutcher, Eaton and Fuertes, Mrs. Chapman, and the author.

At the conclusion of the papers there was an informal gathering in the office of the Curator-in-Chief, with refreshments provided by members of the Executive Committee of the Institute. Afterwards an opportunity was given to view the collections of the Museum.

On Friday, November 17, after adjournment of the Union, and upon invitation of the New York Zoölogical Society, many members visited the Aquarium and the New York Zoölogical Park. They were received and entertained by Directors Hornaday and Townsend, and Curator Beebe.

The next meeting of the Union will be held in Washington, D. C., commencing November 12, 1906.

JNO. H. SAGE.
Secretary.

GENERAL NOTES.

Leach's Petrel inland in Massachusetts.—A boy picked up a Leach's Petrel (*Oceanodroma leucorhoa*) on one of the streets in Clinton, Mass., Sept. 27, 1905. The bird was alive and apparently uninjured, but it refused to eat anything and died October 2. When it was skinned, a wound was found on the head, as if the bird had flown against a wire. This may explain why it was so easily caught, when apparently there was nothing the matter with it. The town of Clinton is thirty-five miles from the sea. The bird is now in the Thayer Museum.—JOHN E. THAYER, *Lancaster, Mass.*

The Name of the Western Sandpiper.—The Western Sandpiper (*Ereunetes occidentalis*) was described in detail and with accuracy by Lawrence in 1864 (Proc. Acad. Nat. Sci., 1864, p. 107), with the habitat, "Pacific Coast; California, Oregon."

Heteropoda mauri was named, but not described, by Bonaparte in 1838, in his 'Geographical and Comparative List of the Birds of Europe and North America' (p. 49). Its distribution is given as "South and Central parts [of North America]," in comparison with "America generally" for his *H. semipalmata* Wilson (=*pusilla* Linn.). The next reference to the species, by Bonaparte, is in the 'Compte Rendu' for 1856, p. 596, in a nominal list of the Scolopacidæ, where there is no description nor indication of locality beyond the inclusion of the species in the list of 'American' species, and the citation, in parenthesis, of "*cabanisi*, Licht." and "*semipalmata* Gundl."

In the same year, Gundlach (Journ. f. Orn., Nov. 1856, pp. 419, 420), apparently for the first time, described the species, basing his description on a series of 5 specimens shot in Cuba, in winter, from a flock of large birds. He distinguished two species of *Ereunetes* in Cuba, a small and a large one. The small one he at first considered to be a new species and described it, in 1850, in Lembeye's 'Aves Cuba,' as *Hemipalma minor*, but later, in 1856, he identified it with *Tringa semipalmata* Wilson, and adopted Bonaparte's name *Heteropoda mauri* for the larger one. He says the two forms are very similar in coloration, but that one is much larger than the other, with very much longer bill and tarsus. He expressed himself in this connection as not having the least doubt of their specific distinctness. He gave the length of the bill in three specimens of the large form as, respectively, one inch, eleven twelfths of an inch, and ten and one third twelfths, as against nine and three-fourths twelfths in the small form; while the length of the tarsus was as ten and three-fourths twelfths to ten twelfths. These measurements of *mauri* are fully up to those given for *occidentalis* by Ridgway, in Baird, Brewer and Ridgway's 'Water Birds of North America' (Vol. I, p. 207).

As *Ereunetes occidentalis* is of frequent occurrence in the Atlantic coast States, particularly in Florida, and evidently also in Cuba, and as the name *mauri*, as given standing by Gundlach, antedates *occidentalis* by eight years, it appears that Dubois (Synopsis Avium, p. 949) was quite justified in bringing *mauri* forward as a substitute for *occidentalis*, and the form should stand as *Ereunetes mauri* Gundlach.—J. A. ALLEN, *American Museum of Natural History, New York City.*

Additional American Records of the Ruff.—In 'The Auk' for October, 1905, pp. 410, 411, Mr. Ruthven Deane published a list of 16 American specimens of the Ruff (*Pavoncella pugnax*). To this list at least six additions should be made, one for South America, two for Barbados, two for Rhode Island, and one for Massachusetts. Five of these records have already been published and for the privilege of recording the sixth bird, a specimen from Massachusetts, I am indebted to Mr. Deane and Mr. John E. Thayer. This specimen, a female, shot by Alfred Dabney on Nantucket, late in July, 1901, was mounted, and is now in the Thayer collection at Lancaster, Mass.

The data for the early records of the Ruff leave much to be desired in the way of completeness. Giraud in 1844 mentioned the fact that "the Ruff, Wheatear, Skylark, and other foreign species have been found on Long Island," but apparently thought that they were birds which had escaped from captivity (Birds of Long Island, p. 309). The first positive record of the species in America is probably that for Barbados, noted by Schomburgk in 1848, instead of that for New Brunswick, published by Boardman in 1862, as stated by Mr. Deane, but in neither case is the exact date of capture known. The first record for North America is apparently the Long Island note published by Lawrence in 1852 in the 'Annals' of the Lyceum of Natural History. Prof. Baird in referring to the species in 1858 said: "The ruff has been so frequently killed on Long Island as to entitle it to a place among descriptions of North American birds, although it can not be said to belong to our fauna" (Pac. R. R. Reports, IX, p. 737). But the only bird in the list which represents those 'so frequently killed on Long Island' prior to 1858, is the Lawrence specimen now in the American Museum of Natural History.

The southernmost record for the species is indefinite both as to date and locality. It was based on 'an abnormally colored specimen' collected by H. Munzberg in 'Spanish Guiana' and submitted for examination with other specimens to Pelzeln, by H. E. Hodek, a taxidermist of Vienna. Pelzeln's notes on Hodek's specimens appeared in 'The Ibis' for 1875, but how much earlier the bird was killed is not known. In the Catalogue of Birds in the British Museum, Vol. XXIV, p. 506, Sharpe gives the locality as 'Dutch Guiana,' but Pelzeln, who uses the term 'Spanish Guiana,' states that it probably refers to the territory between the Upper Rio Negro and the Orinoco or the adjacent part of New Granada.

Careful search will probably bring to light several other records, especially of some of the birds taken on Long Island. For convenience of comparison the data for the six additions to Mr. Deane's list are appended in the same form as that adopted in his table:

Sex	Locality	Date	Collection	References
♀ad.	Barbados, W. I.	Before 1848	British Museum	Schomburgk, Hist. Barbadoes, 1848. Feilden, Ibis, 1889, p. 494.
—	Spanish Guiana	" 1875	H. E. Hodek, Vienna	Pelzeln, Ibis, 1875, p. 322.
♂ad.	Graeme Hall Swamp, Barbados, W. I.	1878	British Museum	Feilden, Ibis, 1889, p. 495.
♀	Sakonnet Point, R.I.	July 30, 1900		Hathaway, Notes R. I. Orn., I, p. 20, 1900.
♀	Nantucket, Mass.	July, 1901	John E. Thayer	Palmer, Auk, XXIII, p. 98, 1906.
♀im.	Point Judith, R. I.	Aug. 31, 1903.	Le Roy King, Newport, R. I.	King, Auk, XXI, p. 85, 1904.

T. S. PALMER, *Washington, D. C.*

Prolific Duck Hawks.— In the spring of 1898 Mr. George H. Burge of this place, at that time actively interested in the collection of eggs of our local birds, took two sets of eggs of the Duck Hawk (*Falco peregrinus anatum*) which seem worthy of record. In the preceding years he had taken several sets of four eggs each of this species at various places along the palisades of the Cedar River, five miles southwest of Mt. Vernon, and had even collected a set of five on April 12, 1895. This last nest-site was a small cavity, three and a half feet in length, and twenty feet from the top of a hundred and ten foot cliff. In 1898 this site was again occupied and on April 5 of that year Mr. Burge and an assistant took therefrom a set of six eggs, slightly advanced in incubation. One egg, and possibly two, appeared to the collector to be infertile. They are quite uniform in size and shape, averaging 49×39 mm., a little smaller than the average as given by Bendire. In color they are nearly typical, though perhaps somewhat light. A pinkish suffusion gives a peculiarly rich appearance to several of the eggs. About three weeks later the same collector took another set of six eggs from a narrow ledge on a sixty foot cliff a half mile farther down and on the opposite side of the river, the aerie being about thirty feet above the water. The eggs were fresh and without much doubt were from the same pair of birds which had shortly before produced the first set of six, the old site having been abandoned. The collector had the misfortune to find two of the eggs of this set crushed slightly in the nest, which probably explains his lack of interest in preserving the exact date of collecting. The eggs were saved in good, whole condition, however, and are the lightest colored specimens of this species which have ever come

under my notice, being very similar to a Sparrow Hawk's egg figured by Bendire (Life Histories of N. A. Birds, Vol. I, Pl. X, fig. 13). In size they average 50×41 mm. and are quite uniform.— CHARLES R. KEYES, *Mt. Vernon, Iowa.*

A Northern Record for the Swallow-tailed Kite (*Elanoides forficatus*) in Wisconsin.— I have recently examined a mounted specimen of this Kite, which was shot at Glidden, Ashland County, Wis., July 26, 1901, by Mr. William Blome of Chicago, and is still in his possession. The few previous records of this species in the State have been confined to the southern portion, while the specimen in question was taken within thirty-five miles of the Lake Superior shore.— RUTHVEN DEANE, *Chicago, Ill.*

Three Michigan Records.—AMERICAN GOSHAWK, *Accipiter atricapillus.* – I recently examined a fine immature female of this species shot by a boy on October 29, 1905, near Orion, Oakland Co., Michigan, which was sent in for mounting to L. J. Eppinger, the Detroit taxidermist. As far as my knowledge extends this is the first bird that has been taken in Oakland County, and the third record for southeastern Michigan, the first being taken near Plymouth, Wayne County, December 24, 1898 (Bull. Mich. Ornith. Club, 1898, 38). However, I have no doubt but that this species ranges through this section of Michigan in late fall and winter to a greater extent than the records demonstrate. Possibly some of the so-called winter records for *A. cooperi* are of this species. Mr. A. B. Covert tells me that an occasional bird finds its way into the taxidermists' hands at Ann Arbor, Washtenaw County.

AMERICAN BARN OWL, *Strix pratincola.*— Records of this species here are rare and irregular. I recently examined a bird taken in Greenfield Township, Wayne County, early in October, 1905. A. B. Covert informs me that he recently mounted a pair of these owls which were brought to him alive at Ann Arbor. The gentleman who brought in the birds stated that they had nested in his yard at Ann Arbor, during the present spring.

SAW WHET OWL, *Cryptoglaux acadica.*— A boy brought in one of these birds which he secured in Detroit on October 24. It is strange that nearly every specimen of this bird that I have examined has been taken by the omnipresent small boy. Personally I have met with but one bird, in December, 1889. — BRADSHAW H. SWALES, *Detroit, Mich.*

Another Large Flight of Snowy Owls.— Unusually large flights of Snowy Owls (*Nyctea nivea*) to and beyond our latitude, used to occur every eight or ten years but it was only three years ago when great numbers visited Canada and the New England and Middle States. We are now taken quite unawares by another flight, which will possibly exceed in numbers that of the winter of 1902-03, as the migration has started somewhat earlier. I have not had opportunity as yet to canvass any

extensive territory but I find more records for Illinois than in previous years. I have examined twenty-eight specimens so far (Dec. 9) received by two of our Chicago taxidermists, the earliest record being Oct. 31. Some of these specimens came from Cook and Lake Counties, Ill., Ironwood, Mich., and from a few localities in Wisconsin. On Nov. 17 I saw a specimen on the "Skokie" marsh, near Highland Park, Ill. After flying a few hundred yards, it alighted on the top of a large haycock where it remained for an hour. In Maine several have been taken near Bangor, and five were sent in to Portland Nov. 14, all taken on Richmond Island, off Scarborough Beach. Mr. M. Abbott Frazar of Boston, writes me under date of Dec. 2, that his establishment had received about twenty specimens, the earliest date being about Nov. 20. They came from different localities on Cape Cod. Mr. H. S. Hathaway of Providence, R. I., reports five as taken in that State on Nov. 16 and 18. About two thirds of the owls which I have examined were large dark females. Some of the males were in fairly light plumage, but none approached the pure white dress in which they are sometimes found.—RUTHVEN DEANE, *Chicago, Ill.*

The Downy Woodpecker.— For more than a year past a Downy Woodpecker (*Dryobates pubescens*) has made his home in the backyard of the house where I live. He was induced to stay last winter by a piece of fat meat which was nailed to one of the trees. In the early winter he drilled a hole in a dead cherry limb about six feet from the ground, and I believe used it all winter as a night refuge. During the past summer it was used occasionally by the same bird, though not with any regularity. About sunset he flies into the hole, which is only four inches deep, and sits there with his head out watching the surroundings until dark. The hole is only about twenty feet away from a back porch of the house that is in constant use, and the bird does not seem to be annoyed by his proximity to the persons sitting there.

On my walks through the woods this fall I have noticed a number of newly drilled holes in dead stumps which look as if they had been made by the woodpeckers for winter refuges. This is a habit of the bird which does not seem to have been noted in the natural histories.— R. P. SHARPLES, *West Chester, Pa.*

Breeding of the Prairie Horned Lark in Eastern Massachusetts.— As a supplement to Dr. C. W. Townsend's note on the discovery in August, 1903, of young *Otocoris alpestris praticola* at Ipswich, Mass., where they had undoubtedly been bred (Auk, XXI, p. 81, Jan., 1904), it may be worth while to record that on Sept. 4, 1905, I obtained two birds of this subspecies, shot in my presence by a gunner (who mistook them for plover!) out of three which were flitting about a stony beach and a grassy hillside at Ipswich. One of these birds is apparently an adult, but the other is a young bird in juvenal plumage just moulting into the first

winter plumage. They are now in Dr. Townsend's collection. As further evidence of the eastward spread of the breeding range of the Prairie Horned Lark, I may add that on Aug. 16, 1903, I saw a lark, doubtless of this subspecies, with a spotted breast and a yellowish bill, evidently in the juvenal plumage, at Natick, Mass. This bird was seen a few days earlier at the same place by Mr. R. B. Worthington of Dedham, Mass.— FRANCIS H. ALLEN, *West Roxbury, Mass.*

Moult of the Snowflake (*Passerina nivalis*).— Dr. Jonathan Dwight's review[1] of Mr. Frank M. Chapman's article on the 'Changes of Plumage in the Snowflake' is concluded in these words: "The Snowflake is one of the interesting species that undergo but one moult in the year." As this species is believed *not* to have a spring moult — either complete or partial — I will show that there is at least a partial moult. A specimen in my collection, ♂ ad. (Smithsonian No. 109,688), April 1, 1884, Fort Chima, Ungava, collected by Mr. L. M. Turner, and which I received in exchange from Mr. Ridgway, clearly shows moult in a semicircle on the jugulum; the auriculars were also being moulted. This specimen, although taken as early as April 1, has almost attained the adult nuptial plumage.

Another quotation from Mr. Chapman's paper by Dr. Dwight is as follows: "'The male has the feathers of the head, nape and rump basally white, while in the female they are basally black',— this difference holding at all seasons of the year." Upon examining the specimens of this species in my collection from New York, Minnesota, Point Barrow, Alaska, and Ungava, I find that the *base* of the feathers of the head, nape and rump are the *same* in both sexes.— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Redpoll Breeding on the Magdalen Islands.—It may be of some interest to know that a nest of a Redpoll (*Acanthis linaria*) was found on Grosse Isle, Magdalen Islands, this year by Mr. H. H. Hann and the writer of this note, while on a short trip to the Islands in June of this year. It was the day before we left Grosse Isle that the nest was found, and most of our belongings were packed for our homeward journey but nevertheless we decided to spend this last day, June 29, on the hill a little to the east of the settlement. About one third the way up this hill, amid the spruce trees, we discovered a small nest in a spruce about six feet from the ground. It was placed near the trunk of the tree and was a dainty affair, neat and rather compact, composed of coarse grass and a goodly quantity of deer moss lined with feathers, about three and one half inches in diameter, and containing four young birds four or five days old. After we had waited there for some time both parent birds returned to the nest. There was no mistake in the identification of these active little birds, with their

[1] 'The Auk,' Vol. XIII, April, 1896, pp. 165, 166.

dark throats and red foreheads, the male with a conspicuous red patch on his breast.

It might also be of interest to note that the Scaup Duck (*Aythya marila*), found quite abundantly on the Magdalens by both Rev. C. J. Young and the Rev. H. K. Job, on their visits to the Islands, were this year no where to be found and the islanders could not account for their sudden disappearance.—J. P. CALLENDER, *Summit, N. J.*

Nesting of the Junco in Eastern Massachusetts.—On May 25, 1905, in the Middlesex Fells, near the Medford border, I ran across a pair of Juncos (*Junco hyemalis*) with food in their bills. I watched them and the female soon went to the nest. It was situated under the edge of a tussock of grass, in an open space in the woods, and contained four well-grown young.

The nearest breeding record I have yet found is Fitchburg, mentioned by Messrs. Howe and Allen in their 'Birds of Massachusetts.— R. S. EUSTIS, *Cambridge, Mass.*

Possible Breeding of Junco hyemalis in Essex County, Mass.—On Sept. 2, 1905, I saw at Boxford, Mass., a young Junco in the juvenal plumage, with streaked back, breast, and belly. The bird was not taken, but I watched it for five minutes, part of the time within ten feet, and fully identified it. Dr. C. W. Townsend (Birds of Essex County) mentions seeing a Junco at Groveland, Mass. (just north of Boxford), Sept. 3, 1904, but he tells me that it was identified from an electric car, and he does not know whether it was an adult or an immature bird. These dates are much earlier than any migration dates known to me, Messrs. Howe and Allen (Birds of Massachusetts) give Sept. 18 as the earliest fall date, and Dr. Townsend gives Sept. 26 for Essex County. As far as I can learn, moreover, the Junco has never been taken in the first plumage at any distance from its breeding grounds, and Dr. G. M. Allen writes me that he has no breeding records for this bird from Southeastern New Hampshire. It is almost impossible, too, that the Boxford bird could have been one of the brood raised in the Middlesex Fells last summer, and recorded by Mr. R. S. Eustis in this number of 'The Auk', for Boxford is some eighteen miles from that locality and nearly due north. All these facts seem to point to the conclusion that the Junco may prove to be at least an occasional, thought doubtless an extremely rare, breeder in Eastern Massachusetts.— FRANCIS H. ALLEN, *West Roxbury, Mass.*

The Lark Sparrow in Massachusetts.— On August 12, 1905, at Ipswich, Massachusetts, I observed at close range a Lark Sparrow (*Chondestes grammacus*). This makes the sixth record of this species for the State, and the fourth for Essex County. Nearly a year before this, on August 21, 1904, I took at Ipswich an adult male Lark Sparrow (Birds

of Essex County, p. 268). It has occurred to me that stragglers in the migrations along our Eastern Coast may not be so very rare, but that they are overlooked, being mistaken for Vesper Sparrows, owing to the white outer tail feathers. In both of the above instances, however, the slightly fan-shaped tail, and the fact that the white was not confined to the two outer feathers, as in the Vesper Sparrow, attracted my eye. The characteristic marking on the side of the head in the Lark Sparrow, seen with a glass within thirty feet, made the diagnosis in the second case absolutely certain.— CHARLES W. TOWNSEND, M. D., *Boston, Mass.*

A Male Golden-winged Warbler (*Helminthophila chrysoptera*) Mated with a Female Blue-winged Warbler (*Helminthophila pinus*) at Bethel, Conn.— On June 11, 1905, Robert Judd, H. C. Judd and myself were walking through a patch of second growth when our attention was attracted by the sharp chipping of two birds, which we found to be a male *Helminthophila chrysoptera* and a female *Helminthophila pinus*.

After nearly two hours of searching and watching I flushed the female *pinus* from the nest, which contained five young about two days old. During this time both birds were very much excited. These two birds were the only *Helminthophilæ* seen or heard in the vicinity.

The nest was placed on the ground in a bed of leaves at the foot of a bunch of chestnut sprouts and was concealed by a few grasses. The grass was not as thick as is usual in typical nesting sites of *H. pinus*. The male *chrysoptera* frequently flew into this bunch of chestnut sprouts while we were watching the two birds.

June 16, Robert Judd and myself again visited the nest and found the young birds had left it. Both of the old birds were around and were very much excited.

After watching them for some time we found one young bird which the female was feeding. This was apparently the only young there was left and it was in typical plumage of young *H. pinus*. We caught the young bird, and among the Chewinks, Yellow-breasted Chats, Indigo Buntings, Field Sparrows, etc., that were attracted by its cries of distress, was a male *H. pinus*, who was promptly driven off by the male *H. chrysoptera*. This was the only male *pinus* seen near the nest at any time. We gave the young bird his liberty again and watched the two old birds for some time. The male was not seen to feed the young bird, but he flew uneasily from bush to bush, chipping frequently.

On account of thunder storms and heavy rains we were unable to make any further observations until June 23. On this date neither the old birds nor young could be found, although we searched thoroughly for several hours. Possibly the young were destroyed by the heavy rains, or some predatory mammal may have finished them. A further search on June 25 and July 9 also failed to show any trace of them.— JESSE C. A. MEEKER, *Danbury, Conn.*

The Cape May Warbler in Litchfield County, Conn.— As the Cape May Warbler (*Dendroica tigrina*) is so rarely reported from this State, it may be of interest to record my capture of a male of this species on May 8, 1905, near the village of Litchfield, Conn. It was with a large flock of Black-throated Green Warblers in a row of Norway spruces bordering the cemetery of the village.— E. SEYMOUR WOODRUFF, *New Haven, Conn.*

A Third Record for the Prairie Warbler in Canada.— On September 5, 1905, while collecting on the east shore of Point Pelee, Essex County, Ontario, I took a young male Prairie Warbler (*Dendroica discolor*). It is now No. 314 in my collection. This is the third record for Canada, the other two being taken at Toronto, Ont., in 1900.— N. B. KLUGH, *Macdonald Institute, Guelph, Ont.*

The Carolina Wren a Summer Resident of Ontario.— On September 5, 1905, while collecting in a thicket on the east shore about two miles from the end of Point Pelee, Essex County, Ont., I secured a young male Carolina Wren (*Thryothorus ludovicianus*). This skin is now No. 315 in my collection, and is the second record for Canada. The first Canadian specimen was taken in February, 1891, at Forest, Ont., by Mr. Montague Smith, and is recorded by mistake as being taken at Mount Forest, Ont., in McIlwraith's 'Birds of Ontario,' p. 392. At the time I collected the specimen above recorded I saw another Carolina Wren. Both were singing and creeping about very rapidly among the underbrush.

On September 6, Mr. P. A. Taverner and I visited the thicket above referred to. Mr. Taverner took a young male which is now No. 299 in his collection, and I secured two fledglings, both males, which are now No. 300 in Mr. Taverner's collection and No. 316 in my collection. Besides those taken we saw another, either an adult or a bird in the first winter plumage.

The two birds first taken were evidently members of an earlier brood, and the two last members of a later brood. The presence of these fledglings constitutes the first breeding record for Canada.— N. B. KLUGH, *Macdonald Institute, Guelph, Ont.*

First Capture of Townsend's Solitaire (*Myadestes townsendi*) **on Long Island, New York.**—A male of this species was captured at Kings Park, November 25, 1905, by Mr. J. A. Weber who kindly put the bird into my hands for identification. It appears to have wandered far from its habitat, the Rocky Mountains, although there is the possibility of its being an escaped cage-bird. While the freshness of plumage and normal length of claws do not preclude this possibility, the species is not, I am told, one that is caged for sale, and the specimen in question seems to have as good a claim to be recorded as have other unexpected waifs in other

localities. A specimen of Townsend's Solitaire has been taken as far east as Illinois, December 16, 1875 (Bull. N. O. C., I, 1876, p. 40), the late date suggesting, as does Mr. Weber's bird, some connection between autumn storms and the wafting eastward of purely accidental western visitors like the one now first recorded for New York.—JONATHAN DWIGHT, Jr., M. D., *New York City.*

Two Birds New to the Avifauna of Kansas.—1. GROOVE-BILLED ANI (*Crotophaga sulcirostris*). A single specimen of this species was captured by a farmer near Emporia, in Lyon County, about November 1, 1904. It is in the collection of the Kansas State Normal School and was reported to me by Prof. L. C. Wooster of that institution. This is, I think, the first instance known of the occurrence of this bird north of the Lower Rio Grande in Texas.

2. RED PHALAROPE (*Crymophilus fulicarius*). A single specimen of this species was shot by Edward E. Brown, assistant secretary of the University of Kansas, on November 5, 1905, at Thacher's Lake, about four miles from Lawrence, in Douglas County. A small flock arose from water about one foot in depth among the weeds, emitting a shrill piping cry. Dr. Coues in his 'Birds of the Northwest,' says: "I introduced this species, although it has not yet been found in the Missouri region, as one which unquestionably occurs at times, and in order to complete an account of the family. It is more particularly a maritime bird.... It is mentioned by Mr. Wheaton among the birds of Ohio, and by Mr. Ridgway among those of Illinois."

These two additions raise the number of species and varieties of Kansas birds whose actual capture has been verified by me to 349.—FRANCIS H. SNOW, *University of Kansas, Lawrence, Kans.*

Some More Michigan Records.— PROTHONOTARY WARBLER (*Protonotaria citrea*). A floating newspaper paragraph called my attention to an alleged case of this bird's breeding in a letter box in the city of Battle Creek this summer. On writing for further particulars, I find the report well confirmed. I received an excellent description of the bird from Mrs. Inez Adams, who had many opportunities for observing the bird through the summer, and who forwarded the nest itself to me later. It agrees perfectly with all descriptions of the nest of this species and is, of course, radically different from the structure built by the Yellow Warbler, which is the only bird that could possibly be mistaken for *P. citrea*. The letter box in question was fastened to a veranda post of the residence of Mrs. C. A. La Pierre, No. 35 Coldwater St., and it was by her kindness that I was furnished with the following particulars, and I can do no better than to quote her words.

"About the 16th of May one of the birds came in at the back door and flew through to the parlor, fluttering there against one of the large win-

dows. I hurriedly opened the front door to give her her liberty; which she seemed in no particular hurry to take advantage of, flying about the room and finally out into the large elm which overhangs our porch. In a few moments she was back again sitting on the porch box, peering inquisitively in at the window where I was at work. I took no notice of the birds until on the 19th, returning from a day's outing in the country, I found my letter box filled with moss and grass. Still, never thinking of a bird building there, I threw it away, supposing it to have been placed there by the children during my absence. A few mornings later our mail carrier, finding the box full, threw it out again upon the porch floor. It was then that I discovered it to be in the form of a nest and replaced it. That same evening, or early next morning, there was one tiny speckled egg laid, for I found it there at six A. M. Each morning, by six o'clock, there would be another egg that had not been there the night before, until there were five, and then she began sitting. We provided a temporary box for the mails, and placed a large fern on a table in front, thus affording what protection we could during the hatching process.

"Next door to us lives a small boy who, with several companions, play and shout from early till late, often running across our lawn and up on our porch. The street is a very busy one and the house stands close to it, so you can imagine what difficulties the little bird had to contend with and with what courage and persistence she managed to make her nest. She was often looked in upon by lamp light, and had bills thrust in the nest before I placed the fern, and was obliged to wait until I removed them, before she could return. They were both so tame that I could often call them to the lower branches of the tree, where they would sit and 'talk back,' but not when others were present.

"They hatched the five eggs and got their young into the tree without anything happening to distress them, and I only wish I could picture their joy, on the morning when the young were able to fly. The male drew me to the door with his loud singing, and I found him perched upon my hammock rope, warbling with a sweetness I had no idea he possessed. He would, occasionally, leave the rope and suspend himself in the air on a level with my head, just outside the door, looking at me all the time. I opened the door, thinking he wanted to come in, as he often had done, but he alighted on the top of the half open screen and continued to sing. I went out, and there was the first of the youngsters on the edge of the box, preparing to make the trip from the nest to the tree. On top of his head was a ball of fuzz like that he had worn previous to getting his feathers, making him look very comical indeed. There was only one wee bird in the nest that night and by the following afternoon all had disappeared as suddenly as they had come and,—listen as I would, I could not even hear a note of the song I had learned to love by association with the bird that sang it.

"They were very cleanly in their habits, making no litter as I expected they would. When the porch was scrubbed with a brush, or even washed

with a hose, they remained undisturbed, and when I sat in the hammock they would change their course of flight from the nest and pass close to my head, and even come into the kitchen wash-day when the room was full of steam."

The above is the interesting account of these birds furnished me by the mistress of the house where they raised their brood. From the light it throws upon the habits of this species when under the influence of unusual environment, I deem it worthy of record. A few rods back of the house flows the Kalamazoo River, bordered by a fringe of willows, and it was doubtless these neighboring conditions that brought the birds to this peculiar nesting site.

AMERICAN HAWK OWL (*Surnia ulula caparoch*). Nov. 19, 1905, a fine-plumaged bird of this species was brought in to Mr. Eppinger to be mounted. With it came the information that it had been killed at Port Huron, St. Clair Co., Mich., and that several more had been taken in that neighborhood. This last statement I have been unable to verify with exact certainty as yet. The bird had not been long dead, as the lice upon it were still lively and crawling about. It was a male and had probably been killed the day before.

GREAT BLUE HERON (*Ardea herodias*). Among other recent interesting occurrences was the unusual numbers of this species taken late this fall. During the first week and a half of November Mr. Campion received eight of them from different persons to mount, all from the vicinity of the Point Mouille Marshes. All were immatures but one. This bird does not usually linger here as late as this in such numbers.—P. A. TAVERNER, *Detroit, Mich.*

Some Nebraska Bird Notes.— *Cinclus mexicanus.* DIPPER.—On page 680 of the recently published third volume of his 'Birds of North and Middle America,' Mr. Ridgway cites the reference by Mr. W. W. Cooke (Bird Migr. Miss. Valley, p. 264) to this species as abundant in Otoe County, Nebraska, and in a footnote points out that this record must be an error since the locality in question is bordering on the Missouri in the extreme eastern part of the State, in "the prairie region, a country different as possible from that inhabited by the present species." In this conclusion Mr. Ridgway is entirely correct, and it is perhaps worth while to point out the origin of the error. Mr. Cooke, as he states, obtained this record from Prof. Samuel Aughey's paper on the food habits of Nebraska Birds (Rept. U. S. Ent. Comm., Appendix II, p. 16) where under the name "*Cinclus mexicanus*, Sw.," he says: "Rare in Nebraska. Seen it for the first time in August on the Niobrara, about seven miles from its mouth, in a dense timber. I was near enough to observe it eating locusts. Hon. J. Sterling Morton says that they are abundant in Otoe County." Examining Aughey's paper it will be seen that in juxtaposition to the technical name of the Dipper is the common name "Western Bluebird,"

and it is clear from the locality and habitat mentioned that the record belongs with the common name, having been inadvertently inserted under *Cinclus* by the printer, while the note intended for the Dipper was entirely crowded out by the same individual. Similarly, the note following, on the Blue-gray Gnatcatcher, will be found also out of its proper place, being inserted under the family Cinclidae. The record of the Western Bluebird from the Niobrara made by Aughey himself is probably a valid one, but the reported abundance of the species in Otoe County is almost certainly a misidentification by Mr. Morton for the common Bluebird which was and still is abundant there.

Progne subis. PURPLE MARTIN.— This year I have seen the Purple Martin commonly across the State; at Imperial June 22, at Culbertson June 23–25, at Stratton June 28, and at Glen, Sioux County, August 5–23. Our previous westernmost record was from North Platte.

Spizella socialis arizonae. WESTERN CHIPPING SPARROW.— The suspicion expressed on p. 88 of the 'Birds of Nebraska' has proved true. A breeding pair of the Chipping Sparrow obtained by me at Glen, Sioux County, August 6, 1905, are very decidedly of the western race. These specimens substantiate the recording of this bird as another addition to our State list.

Cyanocitta stelleri annectens. BLACK-HEADED JAY.— The second record for the State rests upon a bird seen by Prof. Bruner and myself in Warbonnet Cañon, Sioux County, August 9, 1905.

Corvus brachyrhynchos. CROW.— This bird is increasing in Sioux County. The Glen flock mentioned in the 'Birds of Nebraska' has this year increased to twenty-eight.

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.— A pair of these hummers was seen each day about our camp at Glen, August 18–22, feeding at *Cleome* flowers. I feel quite sure that they bred in the vicinity this year.

Actitis macularia. SPOTTED SANDPIPER.—Additional western Nebraska records for this species are a pair seen on a sandbar near Stratton, June 28, evidently breeding near, and three seen at a small pond near Fort Robinson, August 23, in company with several Solitary Sandpipers.— MYRON H. SWENK, *Dept. Entomology and Ornithology, University of Nebraska.*

Should Bird Protection Laws and their Enforcement be in the Hands of the National Government? —There are several reasons why the protection of birds should be in the hands of the National Government.

In the first place, the law which protects bird life from wanton destruction should be uniform throughout the country, and no State or Territory should be without it. As the formulating of the law is a task which requires some knowledge of birds and their habits, and since this knowledge cannot be expected to be possessed by State legislators, the wording of the law

should not be entrusted to State legislatures liable to commit grave errors. For instance, by substituting the word Chicken Hawk for Duck Hawk or Peregrine Falcon the Missouri legislature has sealed the doom of our best mice destroyers, the Marsh and Rough-legged Hawks and the different Buteos, all of which are universally known by the name of chicken hawk.

But while the making of the law is of importance, the enforcement of it is still more important and should not be left to a State game warden who may or may not be in sympathy with it, possibly being a very good fish and game warden, but a very poor protector of birds generally. Even if he should be an enthusiastic bird protectionist, the work itself must chiefly rest in the hands of his deputies and of the local police as ex officio game wardens, men who very often are not in sympathy with the law and would not want to incur the enmity of their fellow citizens for the sake of a law for which they generally care but little or not at all.

We are all agreed to admit that wild birds do not belong to the owner of the ground on which they temporarily alight or over which they chance to fly, but we have not questioned the proprietorship of the State in which the bird is found, though we know that with few exceptions birds travel through a number of States in their migrations and generally spend the winter in one State, the summer in another. It is plain to see that the birds are the guests of the Nation, and that it is therefore the sacred duty of the Nation to give them their protection while with us. As with the landbirds so with the seabirds which come to our shores to breed or fly along our coasts to feed, or in their migrations. They are certainly as much the guests of the country as the landbirds and entitled to protection by the Nation as a whole. Their fate should not be left to the benevolence of private persons. A task so difficult and important should rest on the shoulders of the National Government which alone is able to give the needed protection in full measure. A Nation that spends hundreds of millions to protect her citizens and their rights and interests should be able to give full protection to its feathered wards, for as such must we regard these defenseless creatures. We owe it to posterity to do everything in our power to preserve the beautiful in creation, and not least among that are the birds. It is not only their economic, but also, and much more so, their esthetic value which has to be considered when we form and give judgment on the relation of birds to man and on their right to live. This esthetic worth may have played a small part in the past among the poorly educated masses of our rural population, but it will be of immensely more importance for the better educated and cultured population of the future to which bird life will be a great relief of the monotony of country life already threatening to become almost unbearable by the disappearance of trees, shrubs, wild flowers, and everything else pertaining to beauty and loveliness in Nature.— Otto Widmann, *St. Louis, Mo.*

RECENT LITERATURE.

Stejneger's 'The Birds of the Genus Cinclus and their Geographical Distribution.'— In this paper of ten pages[1] Dr. Stejneger considers the affinities, probable place of origin, and the geographical distributions of the Dippers — an oscinine type modified to assume the rôle of an aquatic bird, and hence presenting puzzling relationships. "Even at this late day there is no absolute certainty as to their most intimate relationships.... The majority of ornithologists of to-day divide upon the question whether the dipper is more closely allied to the thrushes (Turdidæ in the wider sense) or to the wrens." Contrary to his former belief, the author is now "convinced that *Cinclus* has sprung from the same root" as *Sialia* and *Saxicola*, and "that its many peculiarities are mere adaptations to its aquatic habits." Furthermore, instead of assigning to it a neotropical origin, as he did in 1885, he now "has no hesitation in affirming that *Cinclus* is of palæarctic origin"; or, more definitely, that it originated in "that enormous and ancient plateau and mountain region north of India and east of 90° east longitude.... From this center the dippers radiated wherever high enough mountain ranges, or otherwise boreal conditions, permitted them to push forward their colonies." As they are mountain and torrent loving birds, their distribution is peculiar; they inhabit the high mountain systems of the Palæarctic subregion from the Atlantic to the Pacific, but in the New World "are confined to the boreal zone of the long Cordilleran chain from Alaska to the Argentine Republic," extending in South America eastward to eastern Colombia, but in North America not ranging east of the Rocky Mountain system.

He would place the origin and beginning of the dispersal of the group "not later than the dawn of the Tertiary"; and assumes that they reached North America from Asia by the land bridge believed by geologists to have existed somewhere about Bering Sea, at about the time of the uplift of the mountain ranges that parallel the pacific coast from Alaska to Patagonia. Although a wide sea is supposed to have existed across what is now Panama during the early Tertiary, a land bridge joined North and South America early enough for the dipper to have "probably gained a foothold in the Andes before the advent of the Pliocene." "The dipper which reached farthest south (*Cinclus schulzi*) seems to have become most modified, for it has acquired a light rufous throat, a character entirely unique in the genus."

The place of origin and relative antiquity of the several leading types of the group is further considered, and also the influence upon them of isola-

[1]The Birds of the Genus *Cinclus* and their Geographical Distribution. By Leonhard Stejneger. Smith. Misc. Coll. (Quart. Issue), Vol. XLVII, pp. 421–430, April 5, 1905.

tion and other conditions. Some thirty or more forms — species and races — are now recognized, and to facilitate their discussion a synopsis of them, in the form of a key, with their distribution, is given in a footnote. The group, with its peculiar geographical distribution and its several rather distinct types of coloration offers a tempting subject for speculation, which our author has utilized in a most interesting and fairly conservative way, emphasizing at the same time the great dearth of material at present available for study in relation to many of the forms. As Dr. Stejneger says: "All these questions are of the utmost importance and interest, but with the present utterly inadequate material at the disposition of the ornithologist, it is scarcely possible to more than lift a corner of the veil. Until the true inter-relations of these birds have been ascertained; until the distribution of the forms thus established has been actually mapped in considerable detail; and until the results thus gained have been verified by correlation with the physiographic features of the country in the field by competent observers; until then we shall have nothing but guesses. . . . I need only mention that no less than nine different forms of palæarctic dippers have been described during the last two years, the scant material upon which these are mostly founded being distributed among six different museums." Nor is the case of the dippers an isolated instance; it is merely a forcible illustration of the condition of such problems in general, not only in the palæarctic field, but over the greater part of the world's surface.— J. A. A.

Scott 'On the Probable Origin of Certain Birds.'[1]— The birds here referred to, nine in number, are all included in the 'Hypothetical List' of the A. O. U. Check-List, and are the following: *Tringa cooperi* Baird, *Acanthis brewsteri* Ridgw., *Emberiza townsendii* Aud., *Helminthophaga lawrencei* Herrick, *H. leucobronchialis* Brewster, *Sylvia carbonata* Aud., *Sylvia montana* Wilson, *Muscicapa minuta* Wilson. Two of them, *H. lawrencei* and *H. leucobronchialis*, are discussed at length, the other seven being disposed of in few words, his conclusion respecting them being that "the law of parsimony [whatever that may be] compels me to consider these forms as mutations (which were not perpetuated) from *species still existing* which I have, in most cases, been able to indicate." Of four of them the unique type specimen is still extant; the other three are known only from the works of Wilson and Audubon.

In accounting for the origin of all of these nine forms he resorts to de Vries's hypothesis of mutants. In considering the two forms of *Helminthophila* — *lawrencei* and *leucobronchialis* — he emphatically rejects the current hypothesis of hybridity to account for their origin, for, he says, "though hybrids do occur among wild birds, they can be considered at

[1]On the probable Origin of Certain Birds. By William E. D. Scott. Science, N. S., Vol. XXII, pp. 271-282, Sept. 1, 1905.

best as only casual, and the infertility of hybrids, especially among the higher animals, is too well known to need further comment here"! He believes that in the case of these two forms, "we have examples of two separate and distinct 'mutations' from a common parent stock or species. That is," he continues, "I believe that *H. pinus*, early in the last century became unstable as a species and began to throw what must be considered as 'mutants,' taking de Vries's definition of the word." He concludes with the following: "In the light of the evidence set forth only one answer can be made to the question as to the part that the process defined by de Vries as mutation is playing among higher animals to-day. Beyond doubt we have witnessed the birth of new species of birds during the past seventy years. Moreover, some of these new species have flourished so as to have become a salient part of the bird fauna in the region where they occur and where they were unknown to skilled ornithologists, who carefully studied these regions in the early part of the last century." Elsewhere in his paper he lays great stress on the fact that these forms were unknown to "such keen field naturalists as Audubon and Wilson, [Nuttall,] Lawrence, Coues and Prentiss."

Having elsewhere replied[1] in considerable detail to Mr. Scott's paper, we will here merely state, (1) that the area where these birds have been found (except in the case of a very few migrants) was wholly outside of the regions studied by the above named "keen field naturalists," and that their ignorance of these birds does not imply their absence from the area where they have since been found in some numbers, and their probable recent origin; (2) that these birds do not present the stable character observed in mutants, which always breed true; (3) that they occur only where the breeding ranges of *Helminthophila chrysoptera* and *H. pinus* overlap, and are thus strictly comparable with the hybridity seen on a grand scale between *Colaptes cafer* and *C. auratus* over the extensive region where their breeding ranges overlap; (4) that Mr. Scott has not shown a very clear grasp of the facts in the case of these warblers, or of the real character of mutants; (5) that the hypothesis of hybridity, plus more or less tendency to dichromatism, satisfactorily accounts for *H. lawrencei* and *H. leucobronchialis* and their endless variants.— J. A. A.

Clark's 'Birds of the Southern Lesser Antilles.'—This paper, of over one hundred pages,[2] relates to Barbados, St. Vincent, the Grenadines, and Grenada. Twenty-five pages of introductory matter treat of the 'Literature,' 'Geology and Geography' (pp. 206–215), 'Meteorological and Geological Phenomena' (hurricanes and volcanic eruptions), 'Present Status of Bird Life,' 'Locally Extinct Species,' 'Introduced Species,' 'Exported

[1] Science, N. S., Vol. XXII, No. 562, pp. 431–434, Oct. 6, 1905.

[2] Birds of the Southern Lesser Antilles. By Austin H. Clark. Proc. Boston Soc. Nat. Hist., Vol. XXXII, No. 7, pp. 203–312. Oct., 1905.

Species,' 'The Mongoose,' and 'The West Indian Avifauna' (pp. 221–228). The 'Annotated List' occupies pp. 228–302, and is followed by nominal lists of species known to breed in the different islands, and by a bibliography of nearly one hundred titles. The list numbers 168 species as of known occurrence, of which 11 are introduced; 5 others are given as of doubtful occurrence, and 3 as 'hypothetical.' Quite a number of the species admitted rest on single records.

The list is based primarily on observations and collections made by the author during a continuous residence of rather more than a year (August 3, 1902–September 22, 1904), and on the literature of the subject, which appears to have been very carefully examined, including such 16th and 17th century authors as Rochefort, Ligon, Dutertre, Labat, Hughes, and Sloane. *Coccyzus minor vincentis* is here described as new, and four others, based on the investigations here recorded, were described by the author in earlier papers, and are in part here redescribed. Besides the very extended remarks on the distribution and habits of the forms here enumerated, there are often critical remarks on their relationships and probable origin as birds of these islands. The work altogether shows careful research and is an important contribution to West Indian ornithology.— J. A. A.

Oberholser's 'A Monograph of the Genus Dendrocincla Gray.'[1]— Of this difficult genus 18 forms are recognized, namely, 12 species and 6 additional subspecies. Two species and two subspecies are here described as new, and four names previously current are reduced to synonymy. Specimens of all except two were examined, including the types of seven of them. *Dendromanes* Sclater, proposed for *Dendrocincla anabatina*, is treated "as a simple synonym of *Dendrocincla*." There is a key to the species and subspecies, and the type locality, distribution, and synonymy of each are given.— J. A. A.

Beebe's 'The Ostriches and their Allies.'— Apropos of the recent opening of the Ostrich House in the New York Zoölogical Park, Mr. C. William Beebe, Curator of Birds at the Park, has prepared an excellent popular account of 'The Ostriches and their Allies,' which is published in the Ninth Annual Report of the Society, and also separately.[2] It consists of Part I, a general account of the Apteryges, the Emeus, the Cassowaries, and the Ostriches, and Part II, their external structural adaptations to cursorial habits. The text is a well prepared popular account of these

[1] A Monograph of the Genus *Dendrocincla* Gray. By Harry C. Oberholser. Proc. Acad. Nat. Sci. Philadelphia, 1904, pp. 447–463, June 19, 1904.

[2] The Ostriches and their Allies. By C. William Beebe, Curator of Birds. Ninth Ann. Rep. New York Zoöl. Soc., 1904, pp. 203–229. Also separate, 8vo, pp. 32, with 8 half-tone plates and 11 text illustrations.

birds, their modifications and adaptations; the illustrations, based on photographs, show the living birds, their feet, wings, and feathers. It is thus well adapted to its function of a manual of instruction for visitors to this portion of the exhibits at the New York Zoölogical Park.— J. A. A.

Beebe's 'Two Bird Lovers in Mexico.'[1]— 'Two Bird-Lovers in Mexico' is a pleasantly written account of a winter trip across Mexico, from Vera Cruz to Manzanillo, made by the author and his wife during 1903–04. As much time was spent 'roughing it,' camping out with a guide and traveling with animals, their opportunities for studying the birds and animals of portions of the States of Colima and Jalisco could hardly have been more favorable, and the pages of this attractive book, as regards both illustrations and text, show the good use made of these unusual advantages. 'Two Bird-Lovers in Mexico' is thus a book for the general reader as well as the nature-lover and the naturalist. Says the author: "The entire trip was so novel, so absolutely devoid of unpleasant features, and on the whole so inexpensive, that it seemed to me that the knowledge of such an outing would tempt many lovers of Nature to this neighboring Republic." Mr. Beebe's book cannot fail to be such an incentive, and the chapter by Mrs. Beebe on 'How we did it' will be of great assistance to those who may wish to follow in their footsteps.

Besides the incidental and many quite extended notices of birds, mammals, reptiles, and insects contained in the three hundred and fifty pages or more of the general narrative, an annotated list of the birds and mammals observed is given in an appendix of twenty-five pages, with cross references to the general text[2] where they are further mentioned or more fully described. As the author is an enthusiastic and well trained observer, his narrative of experiences in the Mexican tropics is full of attractively presented information respecting the region visited and its inhabitants — human as well as animal and vegetable.— J. A. A.

Hantzsch's Birds of Iceland.[3]— This detailed summary of present knowledge of the ornithology of Iceland consists of two parts, the first being the generalities of the subject (pp. 1–90), and the second a systematic

[1]Two Bird-Lovers in | Mexico | By | C. William Beebe | Curator of Ornithology of the New York Zoölogical Park and Life | Member of the New York Zoölogical society; Member | of the Ornithologists' Union | Illustrated with Photographs | from Life by the Author. | [Vignette] Boston and New York | Houghton, Mifflin and Company | The Riverside Press, Cambridge | 1905 — 8vo, pp. xii+408, with 15 half-tone plates and 108 text cuts. $3.00.

[2]Unfortunately the references to the later part of the book are quite often two pages out of the way, as if made from proof-sheets and the pagination later changed by carrying the folios two pages ahead.

[3]Beitrag zur Kenntniss | der | Vogelwelt Islands | Von Bernhard Hantzsch | Mit 26 Abbildungen und 1 Karte | Berlin | Verlag von R. Friedländer & Sohn | 1905 — 8vo, pp. vi+341, with 24 text cuts and 1 map. Price 12 marks.

account of the species (pp. 92–338). Part I consists of seven sections, comprising: (1) a historical résumé; (2) a list of the principal works and papers on Iceland birds; (3) an account of the author's travels in Iceland, and of bird protection; (4) the topography, and the physical and biological features of the island; (5) changes in the bird life of the island within historic times, including an account of the extinction of the Great Auk; (6) derivation of the Icelandic ornis; (7) the economic value of the birds to the inhabitants. Section 6 contains also a briefly annotated list (59 species) of the birds of the little island of Grimsey, off the north coast, and another (68 species) of those of the islet Vesmannæyjar, off the south coast.

Part II begins with a list of the species authenticated as birds of Iceland, numbering 120, with brief annotations as to their relative abundance and manner of occurrence. The list also includes, but not numbered as a part of the list, 12 species as of casual or probable occurrence, and the extinct Great Auk. Each is treated, generally at some length, in the following 240 pages of the work, including references to previous records of the species as birds of Iceland, their vernacular names in various languages, their distribution, relative abundance, habits, uses, etc., together with, in many cases, measurements of Iceland specimens, and a statement of the color of bill, feet, and naked soft parts, taken from fresh specimens by the author. The work is thus not only the latest but a most comprehensive and useful treatise on the ornithology of Iceland. The illustrations (half-tone reproductions of photographs in the text) include views of the breeding places of a number of species, and the nest and eggs of *Megalestris skua*, etc., but relate mainly to the physiographic features of the island, and are thus, though rather poorly reproduced, of great assistance in giving a clear impression of the prevailing physical conditions in different parts of the island.— J. A. A.

Csörgey's Ornithological Fragments from the Manuscripts of Johann Salamon von Petenyi.[1]—Johann Salamon von Petényi (born 1799, died 1855) was one of the founders of systematic ornithology in Hungary, for many years custodian of the Hungarian National Museum, and a friend of C. L. Brehm, J. F. Naumann, E. Baldamus, and other eminent ornithologists of his time. He was engaged for many years in gathering material for a comprehensive work on Hungarian birds, but died before it was ready for publication, and discoveries of species new to the Hungarian ornis first made by him remained unpublished till their rediscovery later by other workers. The fragments of his manuscripts, rescued from oblivion, and here brought together and published half a century after

[1]Ungarishe Ornithologische Centrale | — | Ornithologische Fragmente | aus den Handschriften von | Johann Salamon Petényi | Deutsch bearbitet | von | Titus Csörgey | Mit einer Einleitung | von | Otto Herman | [Vignette] Gera-Untermhaus | Druck und Verlag von Fr. Eugen Köhler | 1905 — 8vo, pp. 36+400, frontispiece, 6 colored plates, and 16 text cuts.

his death, show him to have been one of the leading ornithological students of his time, and even after a lapse of fifty years they have still value and interest as a contribution to Hungarian ornithology.

An introduction of nearly twenty pages by Otto Herman contains an interesting biographical sketch of Petényi, and the editor's preface adds many details respecting his ornithological work. From the latter it appears that as early as 1842 he had already reached the point of distinguishing climatic varieties as such. In the 'Fragmente' we have some account of less than half of the species of the Hungarian ornis, and these accounts vary from rather brief and incomplete notices to elaborate monographs, as in the case of *Falco sacer*, which occupies over twenty pages, besides some dozen additional pages by the editor, on the status of *F. feldeggi*, which he considers as merely a subspecies of *F. sacer*. The illustrations, by the editor, though not numerous, are especially noteworthy, particularly for the naturalness of pose of the birds depicted, both in the text cuts and in the plates; in fact, more life-like or more pleasing bird pictures we have rarely seen.— J. A. A.

Harvie-Brown's 'Travels of a Naturalist in Northern Europe.' — These two beautiful volumes[1] relate to travels made by the author some thirty to thirty-four years ago, in Norway, Archangel, and Petchora, but the narrative has lost little of interest through the long delay in making it public. It is in journalistic form, being the author's journals just as he "wrote them down at the close of each day," with no attempt to rewrite or clothe in new phraseology the original entries. And herein lies much of the charm and much of historical value.

The first trip was to Norway in 1871, the account of which occupies pp. 1–103, with an appendix of twenty pages giving an annotated list of the birds (101 species) observed. The second trip was to Archangel in 1872, recounted in pp. 127–182, with appendices (pp. 183–209) giving lists of the birds and eggs collected around Archangel, and of the rarer birds in the museum at Archangel. The third journey was to Petchora in 1875 (pp. 215–476), the account of which is followed by several appendices on the ornithological results of the expedition, with some account of the Samoyèdes. The author on the first two trips was accompanied by the late Edward R. Alston, and on the journey to the Petchora by the late Henry Seebohm, on which journey was based his well-known 'Siberia in Europe.'

The illustrations include two colored plates (eggs of Gray Plover and Little Stint), portraits of the author, of Prof. Robert Collett, E. R.

[1] Travels of a Naturalist | in Northern Europe | Norway, 1871 | Archangel, 1872 | Petchora, 1875 | By | J. A. Harvie Brown, F. R. S. E., F. Z. S. | Member of the British Ornithologists' | Union, etc. | Joint Author of 'Fauna of the Moray Basin' and | 'A Vertebrate Fauna of Orkney'; | Author of 'A Vertebrate Fauna of the N. W. Highlands and Skye' | With coloured plates and other illustrations | and 4 maps | Vol. I [-II] | London: T. Fisher Unwin | Paternoster Square. MC MV | — 2 vols. 8vo. Vol. I, pp. i–xiv, 1–260, 15 pll. and 2 maps. Vol. II, pp. i–viii, 261–541, 2 col. pll., 2 maps, 8 plain pll., and numerous text cuts.

Alston, Henry Seebohm, and others, several landscape views, nests of the Osprey, and various text illustrations of native implements, etc., and maps showing the routes traveled.

The daily narrative of the experiences of these travellers and collectors in these far northern and still little known regions, noting the progress of the season, the arrival and nesting of the birds, the characteristics of the country and the people, will be read with sympathetic interest by many beyond the wide circle of ornithologists to which it immediately appeals.— J. A. A.

Wytsman's 'Genera Avium.'—This important work[1], proposed in 1903 (see Auk, XXI, 1904, p. 312), seems now well under way, the first five parts having recently reached us for notice. Each part, restricted to a single family, is paged separately, and is practically complete in itself. Part I, by Ernst Hartert, treats of the Eurylæmidæ (pp. 8, 1 pl. col.); Part II, by P. Wytsman, of the Todidæ (pp. 4, 1 pl. col.); Parts III, IV, and V, by T. Salvadori, treat respectively of the Stringopidæ (pp. 2, 1 pl. col.), Nestoridæ (pp. 3, 1 pl. col.), and the Cacatuidæ (pp. 7, 1. pl. col.). The text consists of a brief general account of the family, in regard to its relationships and technical history, keys to the genera and species, with their principal synonymy and geographical distribution. The work will thus be of great convenience and value as a synopsis of the birds of the world. It is edited by P. Wytsman, is published in English, and the illustrations are by Keulemans. They give a full length figure of a characteristic species, with head, feet and other detail figures of a number of other species, thus far all in color, and of course well executed.— J. A. A.

'Ootheca Wooleyana.'—We are glad to note the appearance of Part III[2] of this well-known work, comprising 'Columbæ-Alcæ.' It is of course prepared on the well-considered lines of the previous parts.[3] In addition to being a catalogue of the famous Wolley Collection, with authentic and detailed records of the specimens, it comprises also extended notes on the nesting habits and breeding ranges of the species, often to the extent of eight to a dozen pages to a species, with many important editorial additions. The entry numbers included in the present volume are 2798 to

[1]Genera Avium. Edited by P. Wytsman, with Contributions by Messrs. P. L. Sclater, R. Bowdler Sharpe, W. R. Ogilvie-Grant, E. Hartert, C. E. Hellmayr, T. Salvadori, etc. 4to, with colored plates. Printed and published by V. Vertemull & L. Desmet, Brussells. Parts I–V, 1905. (Pt. I, 3/9; Pt. II, 3/1; Pt. III, 2/; Pt. IV, 2/11; Pt. V, 6/0.)

[2]Ootheca Wolleyana: An illustrated Catalogue of the Collection of Birds' Eggs formed by the late John Wolley, Jun., M. A., F. Z. S. Edited from the original notes by Alfred Newton. — Part III. Columbæ-Alcæ. — London: R. H. Porter, 7 Prince's Street, Cavendish Square. M. C. M. V. [Price £2 2s. net. — 8vo, pp. i–iv, 1–384, pll. col. xiv–xxi.

[3]Part I, Accipitres (including Striges), 1864; Part II, Picariæ-Passeres, 1902.

4840, representing about 135 species. The eight colored plates relate exclusively to the eggs of the Great Auk, seven of which and a cast of another are figured, the accompanying text occupying pages 364–384. It is a matter for sincere congratulation that Mr. Wolley's valuable field notes and records are finally being made accessible, and given permanent form in a manner so attractive and under such competent editorship.—J. A. A.

Economic Ornithology.—The ravages of the cotton boll weevil in Texas during the last few years and its prospective extension into other cotton-growing districts has led the Biological Survey to undertake investigations to determine what species of birds feed upon this weevil and to what extent they are likely to prove a check upon its increase. The preliminary results thus far reached have been summarized by Mr. Vernon Bailey, in a special report,[1] based on the examination of the stomachs of a large number of birds collected in and around the cotton fields, chiefly in the month of November, 1904, in southern Texas. The weevils were found in the stomachs of about a dozen species of birds, out of about 38 species examined, usually in small numbers, but in sufficient quantity to show that the efficient protection of insectivorous birds is of considerable importance to cotton-growers.

The economic relations of the Bob-white and other quails of the United States is the subject of a report by the late Dr. Judd, published also as a 'Bulletin' of the Biological Survey.[2] The eastern Bobwhite and its subspecies, here treated collectively, occupies, quite naturally, about two thirds of the report, the species of the Southwest the remaining third. There are two plates by Fuertes, one of 'Bobwhite in a potato field,' the other of the 'Gambel quail.' The first is colored and serves as an attractive frontispiece. Various text cuts illustrate the seeds of different weeds that are a pest to the farmer, tons of the seeds of which are destroyed annually by Bobwhite. This bird is considered (1) as an ally of the farmer, (2) as an asset of the farm, (3) as an article of food, (4) as an object of sport, (5) in relation to its esthetic value; several pages are also devoted to measures for its preservation and propagation, and about fifteen pages to a detailed account of its food habits. About 53 per cent of its food consists of seeds, chiefly those of plants injurious to agriculture. An additional 15 per cent is insects, which includes such noxious species as the potato beetle, chinch bug, weevils of various species, cutworms, grasshoppers, and many others. The remainder of its food consists mainly

[1] Birds known to eat the Boll Weavil. By Vernon Bailey. Chief Field-Naturalist, Biological Survey. U. S. Department of Agriculture, Biological Survey, Bulletin No. 22, 8vo, pp. 16, 1905.

[2] The Bobwhite and other Quails of the United States in their Economic Relations By Sylvester D. Judd, Assistant, Biological Survey. U. S. Department of Agriculture, Bureau of Biological Survey, Bulletin No. 21. 8vo, pp. 66, 1905.

of wild berries and other wild small fruits. The California and other western species of quails have of course quite similar habits, but prove to be more or less destructive locally, from their great numbers, to certain farm crops, as grains and fruits, and especially grapes. They likewise destroy large quantities of weed seeds and injurious insects, but are, on the whole, considerably less insectivorous than the Bobwhites.

The Horned Larks in reference to their relation to agriculture have recently been studied by Mr. W. L. McAtee.[1] He finds that about 20 per cent. of their food consists of insects, ranging from less than two per cent. in the winter months to over 50 per cent. during some of the summer months. The rest is vegetable matter, consisting largely of the seeds of weeds and other useless plants, practically no cultivated fruit being taken, and the amount of grain that enters into their fare is a negligible quantity, although at some localities in California complaints have been made of their depradation upon newly-sown wheat. It is found, in fact, that the California horned larks differ markedly from those of other parts of the country in the high percentage of grain they consume, being three times that of the larks of other localities. On the whole, however, says the verdict: "So small in amount is the grain thus taken and over such restricted areas that, aside from the fact that at small expense all damage can be prevented, the loss bears no comparison to the benefits conferred. The horned lark by its services to agriculture earns a right to live, and deserves protection at the hands of man."— J. A. A.

CORRESPONDENCE.

On the Criticism of Heft III of 'Die Vögel der paläarktischen Fauna.'

To the Editors of 'The Auk':

Dear Sirs:— It has always been a pleasure to me to see that my ornithological writings have been looked upon favourably in America, and I am anxious that they are fully understood in your country, because I have a very high opinion of most of the ornithological work done in America. This is the reason why I wish to say a few words about the generally kind review of Part III of my book on the birds of the palæarctic fauna, in 'The Auk,' Vol. XXII, p. 428. The reviewer takes exception to my "conservatism" in respect to gen-

[1] The Horned Larks in their Relations to Agriculture. By W. L. McAtee, Assistant, Biological Survey. U. S. Department of Agriculture, Biological Survey, Bull. No. 23. 8vo, pp. 37, 2 plates, and 13 text cuts.

era, and says that I have merged all the subgenera recognized by Hellmayr in his recent excellent monograph of the Paridæ in *Parus* and that "my treatment of this and allied families is far less satisfactory, and less consistent and rational, than the recent revision of these groups by Hellmayr." . Needless to say I am not of the same opinion. The reviewer does not explain in which way my treatment is inferior to that of Hellmayr. The one point he objects to is, that I have no use for subgenera. This, however, is a matter of opinion, and the omission of subgenera does not make a work inferior. In my opinion subgenera are an unnecessary impediment. If a number of species is to be grouped into various sections, this is better done under nameless headings, such as "Blue Tits," "Grey Tits" etc., or A, B, C but if a name is given to these sections — which of course have not generic value, or else they would be recognized as genera — it leads to some persons adopting these names, others not, and some even using both names! This inconsistent treatment may be seen every day. Every student of palæarctic Paridæ must come to the conclusion, that the genus *Parus*, as limited by me, cannot be split into full genera: nevertheless a "subgenus" *Cyanistes* (among others) is recognized by some authors. What is the result? Most authors call the "Blue Titmouse," the type of the "subgenus" *Cyanistes* as usual *Parus cæruleus*, others make use of the subgeneric name and call it *Cyanistes cæruleus*, others again call it *Parus* (*Cyanistes*) *cæruleus*. All this is avoided by not giving a name to the so-called subgenera, regarding them merely as sections, tribes or subdivisions and calling them group A, B, C, etc., or the Black-and-white group, group with yellow or without yellow, etc. I fail to see entirely for what purpose subgenera are recognized and named, if no use is made of their names; on the other hand it is not scientific to treat them as genera, because, as in the present case, they cannot be separated by any constant characters, and I object to using both names, *i. e.* that of the genus and subgenus, because it makes our nomenclatorial apparatus unnecessarily cumbersome. Ergo: my most decided opinion is that "subgenera" are unnecessary and undesirable.

Except in the absence of subgenera my work differs from that of Mr. Hellmayr in the following points: I have combined still more allied forms as subspecies, added some formerly unknown forms and corrected a few errors. I do not deny my very strong tendency to combine allied forms as subspecies. My reviewer says that I have done this "sometimes apparently without satisfactory reasons therefor, as where *Parus sclateri* of Mexico is made a subspecies of *Parus palustris*, although separated geographically by thousands of miles. . . ." This treatment is, in my opinion, only apparently, but not really "unsatisfactory." My critic has never seen *Parus dejeani* nor *Parus hypermelæna*, or he might more likely have said that they were indistinguishable from *Parus sclateri*, and *P. dejeani* and *hypermelæna* are in my opinion connected by intermediate forms with *palustris*, and therefore subspecies. All this I have carefully explained in my book. These are difficult forms and difficult questions, to the study of which I have devoted the best part of a winter, with a material never seen before by one

man at the same time, and not easily brought together again, since many museums and friends sent me whole collections and single specimens for study, in addition to the wonderful material in the Tring-Museum, the results of many years of labour and expense. I do not think that such intricate questions can be criticized and declared to be "apparently unsatisfactory," unless the critic himself has devoted months of study to the subject.

Whether my work is inferior to that of my friend Hellmayr will soon become apparent, because the latter author will before long publish a new review of the Paridæ of the world, and I am in the happy position to predict that Mr. Hellmayr will adopt practically all my alterations. In fact I have discussed many questions with him and we have finally agreed in all of them.

I have of course no objection to my kind critic's different views on certain points — in fact science is often benefited by the ventilation of various views — but I do object to the statement that there are "certain excentricities" in my book. It is quite possible and even probable that certain of my conclusions are erroneous, for every human being makes mistakes sometimes, but my conclusions are not jumped at without critical studies, they are not combinations of "happy ideas" or the dangerous outbursts of a "brilliant mind"— but they are the logical results of careful and painstaking investigations. They may be, as I have said, erroneous in certain cases, but they are not "excentricities," and a perusal of my book should reveal this to every ornithologist.

ERNST HARTERT.

Subgenera, and Other Matters.

WHILE Dr. Hartert is not alone in considering that subgenera "are unnecessary and undesirable," sympathizers with this view, taking naturalists at large, are apparently few and far between, judging by their works. In faunistic papers and in ordinary references to species, subgenera are preferably ignored, even by those who believe they subserve a useful purpose. In works of a classificatory character, as monographs, manuals, and systematic treatises on the birds of a large area or of particular countries, they should be no more omitted than the higher groups, since their use in the case of a large genus serves to indicate the relative degree of relationship of its different members.

To subdivide such genera into minor groups, and label them A, B, C, etc., or by some non-technical designation, as 'Blue' or 'Green,' in lieu of giving them a name by which they can be easily referred to as groups, only half meets the requirements of the case; it is only an ineffectual attempt to 'beat the devil round the bush.'

There is, and doubtless always will be, great diversity of opinion as to the proper limits of genera. Dr. Hartert, for example, is exceedingly con-

servative, and is satisfied often to combine into one genus a number of groups that many, possibly most, other ornithologists would keep apart as good genera; and even in other less heterogeneous groups, they would sometimes consider it desirable in classification to recognize certain subdivisions by name as subgenera. Even to drop subgeneric names from species designations would come far from bringing nomenclature to the standard adopted in 'Die Vögel der paläarktischen Fauna.'

As Dr. Hartert admits his "very strong tendency to combine allied forms as subspecies," it is perhaps not fair to criticise his conclusions without equal opportunity to go over the ground; yet one's experience in similar lines of research is apt to give an impression of the probabilities in such matters.

Perhaps the term "eccentricities" is rather too severe to apply to any features of the great work now under mention. But there is one point that, to say the least, seems a little extraordinary, namely, the disregard of the rule adopted by all codes, from the first 'B. A. Code' to date, that adjectival specific names must agree in gender with the generic name with which they are associated. For one author to rebel against such a general consensus of opinion, even on the plea of conserving stability in nomenclature, is to introduce a jarring element not at all conducive to either harmony or uniformity. From Linné down to the last International Code, generic names have been construed as substantives in the nominative singular, with which it has been universally ruled that adjectival specific names must agree in gender. Dr. Hartert's rebellion against this rule may be considered as approaching 'eccentricity'; at least this is one of the points I had in mind in using this, perhaps rather unfortunate, term.

Closely akin to this is the retention of names etymologically the same, if differing in orthography by a single letter, dependent even upon gender. But, 'more's the pity,' my friend Hartert is not the only aggressor in this matter, which is likely to become, or perhaps is already, the most serious bone of contention in nomenclatorial questions. We had hoped for his influence on the side of stability, and therefore feel deeply grieved that he should have espoused a principle, which, if even partially adopted — for we cannot expect a general stampede to an innovation so subversive of long accepted rules of nomenclature — will do more to upset stability than any other conceivable practice.

Again, since the promulgation of the British Association Code of Nomenclature in 1846, Brisson's genera have been almost universally accepted as tenable. Possibly a few authors during the last fifty years have declined to recognize them, but they have been very few in comparison with those who have been willing to follow in this matter the ruling of the 'B. A. Code.' When therefore the author of 'Die Vögel der paläarktischen Fauna' declines to accept Brisson's genera, and makes bold to state that in his opinion they are not genera at all, such action seems to come very near the border line of 'eccentricity.'

For more than half a century zoölogists have recognized the importance

of mutual agreement in respect to nomenclatorial rules, and repeated efforts have been made to prepare codes that should be so reasonable in their provisions as to meet the approval of at least the majority of zoölogists. The most important move in this direction was the appointment, some years since, by the International Zoölogical Congress of a representative committee to study the already existing codes and, on the basis of this examination, to formulate a code of rules that should meet as nearly as possible, in the estimation of the committee, the requirements of modern zoölogical nomenclature, this code to receive the endorsement of the International Zoölogical Congress, and thus carry with it the influence and approval of a representative international body of zoölogists. While such a code, of course, would not be mandatory, the solicitude of all working zoölogists to secure uniformity of usage in matters of nomenclature would naturally tend to the waiving of personal preferences and prejudices for the sake of stability and uniformity in nomenclature.

A code of nomenclatorial rules must necessarily be to some degree arbitrary in its fundamental principles, and a compromise in respect to many important details. Most of us have strong opinions and preferences on many points, but in case they should run counter to the rulings of a representative international committee one should consider that loyalty to the best interest of science in so important a matter as uniformity and stability in nomenclature would render it laudable for one to contribute his mite in securing such desirable ends by waiving his preferences and accepting what such a body of naturalists had decided was for the general good. To do otherwise would be to assume the rôle of an obstructionist, whose 'eccentricities' in nomenclatorial matters it would be proper for other zoölogists to ignore.

Thus it is a matter of serious regret that Dr. Sharpe, in his 'Hand-List of the Genera and Species of Birds,' should have persisted in taking Linnæus at 1766 instead of 1758 as the starting point of binomial nomenclature, thus putting the work seriously out of touch with present tendencies and usage, to the inconvenience of the great majority of workers in the same field. The placing, in the same work, of species and subspecies, on the same basis as regards nomenclature is also a most inconvenient and unscientific archaism, not to say 'eccentricity,' greatly to be regretted. It is individualism of this sort that is retarding uniformity and stability in nomenclature.

For many years we have been an admirer of Dr. Hartert's careful work and advanced methods, and have often had the pleasure, as a reviewer, of commending his works and papers. Some twenty years ago the A. O. U. published a 'Code of Nomenclature,' which introduced a number of innovations, among them the adoption of the 10th edition of the 'Systema Naturæ Linnei' as the starting point of binomial nomenclature, the adoption of trinomials for subspecies, and the non-emendation of names. They each encountered for a time much opposition, but in recent years all have found their way into nearly all of the modern codes of nomenclature, in-

cluding the latest draft of the International Code. Among the first European ornithologists to accept the more important of these innovations, and to show a just appreciation of the principle of subspecies and trinomialism, was the author of 'Die Vögel der paläarktischen Fauna'; and it is therefore all the more to be regretted that he has gone so far beyond the original intention of the non-emendation principle as to make it a menace rather than an aid to stability in nomenclature.

J. A. ALLEN.

NOTES AND NEWS.

AT THE last Congress of the A. O. U., held in New York City November 13–16, 1905, the Union authorized the Committee on the Nomenclature and Classification of North American Birds to prepare a new edition of the A. O. U. Check-List, with a view to its early publication. As the nomenclature of the Check-List was based on the A. O. U. Code, published twenty years ago, it was also deemed advisable to make a critical examination of the Code, with a view to amending some of its provisions, to make it meet more fully the present requirements of zoölogical nomenclature. In order to make such a revision available for use in the preparation of the new edition of the Check-List, a special committee was appointed to take up the matter with as little delay as possible, its report to be submitted to a meeting of the Council to be called specially to act upon it. The Committee appointed on the revision of the Code consists of the following: J. A. Allen (chairman), Theodore Gill, Henry W. Henshaw, Harry C. Oberholser, Wilfrid H. Osgood, Charles W. Richmond, Witmer Stone. Within a few days after the adjournment of the Congress the Committee on the Code was called to meet in Washington on Dec. 11, 1905. A four day's session was held, beginning on this date, at which all of the members were present. Several important and a considerable number of minor changes were adopted, nearly all unanimously and the others with only one or two (in one case only) dissenting votes. It is expected that a special meeting of the Council will be held in Washington about the middle of January, to receive and act upon the report of the Code Committee. A meeting of the Nomenclature Committee will immediately follow, to begin work upon the new edition of the Check-List.

In this connection it may be safe to premise that probably the forthcoming third edition of the 'Check-List' will be quite different from either of its predecessors. In these days of rapid progress in zoölogical research, twenty years is a long period, and while the classification adopted in the

present Check-List seemed fairly satisfactory in 1886, it long since ceased to represent modern views respecting avian taxonomy. The present, therefore, seems a favorable opportunity to revise the classification of the higher groups, and thus bring the Check-List once more into harmony with present knowledge of the subject. The geographical ranges of the species and subspecies will be most carefully revised, probably by a special subcommittee, and thus brought down to date. There will doubtless be also a few changes in generic names, some of which have been for some time impending.

THE FIRST annual meeting of the National Association of Audubon Societies was held at the American Museum of Natural History in New York City on October 31, 1905. Twenty-seven members were present at the business meeting, held in the morning, representing Massachusetts, Rhode Island, Connecticut, New York, New Jersey, North Carolina, Oregon, and the District of Columbia. The afternoon session, which was open to the public, was attended by several hundred persons interested in the work of bird protection. The Treasurer's report showed the Association to be in a prosperous condition, with a bright outlook for the future. Six of the directors, whose terms had expired were reëlected for the term of five years, namely: George Bird Grinnell, New York; Arthur H. Norton, Maine; H. P. Attwater, Texas; Walter J. Blakely, Missouri; Mrs. Mabel Osgood Wright, Connecticut; and Mrs. Kingsmill Marrs, Florida. William L. Finley, Oregon, was elected to fill the unexpired term of Isaac N. Field, deceased. The President's report was given in abstract and ordered printed in 'Bird-Lore,' and also separately for general distribution.

At the afternoon session the principal topic of discussion was cats, in their relation to bird protection. The principal speakers were Dr. George W. Field, President of the Massachusetts Fish and Game Commission; Dr. T. S. Palmer, Biological Survey, Washington; Rev. William Lord, Massachusetts, and Mr. Frank M. Chapman. It seemed to be agreed that if cats could be kept at home, and their owners made responsible for them, as in the case of dogs and other domestic animals, the lives of multitudes of wild birds would be annually saved. At the close of the discussion the following resolution was adopted:

"*Resolved*, That in the interests of humanity and bird protection the National Association of Audubon Societies endorses the movement to make the owners of cats responsible for their acts and welfare."

At the afternoon session Mr. William L. Finley gave an account of his experiences among the large colonies of water-birds which breed in southeastern Oregon, illustrated with lantern-slides; and Mr. Frank M. Chapman gave an illustrated talk on English bird life, based on his experiences of the past summer.

The Annual Report of the President of the Association, Mr. William Dutcher, has been published in the November-December, 1905, number of 'Bird-Lore' (Vol. VII, pp. 295 350), and occupies fifty-six pages, including a number of pertinent half-tone illustrations. As in Mr. Dutcher's

former annual reports, for sometime published in 'The Auk,' it contains much matter of permanent value as ornithological literature, aside from that relating more directly to the history of bird protection. It consists, as usual, of (1) a history of the year's work, detailing the principal results in the matters of legislation, the securing of 'reservations' for breeding bird colonies, the protection of birds through the employment of wardens, coöperation secured with foreign countries, etc.; (2) suggestions for future work; (3) abstracts from State reports; (4) list of members and contributors; (5) the Treasurer's report. It is sufficient to say here that the success that has in years past attended Mr. Dutcher's enthusiastic and well-considered efforts for bird protection has in no way declined, but with the greater power and influence and the increased means that have come to his aid through the organization and incorporation of a National Association of Audubon Societies, the work has assumed larger proportions, and become more far-reaching and aggressive. It is pleasant to note that the membership of the Association is rapidly increasing, and with it the funds available for carrying on the work, the latter having increased 250 per cent. during 1905. His report should have a wide circulation, not only among ornithologists but among philanthropists interested in whatever pertains to the preservation of wild creatures, for either their present economic and esthetic importance, of for the benefit of future generations.

MANY of the Members of the A. O. U. who attended the recent Congress in New York City, had at the close of the session a most enjoyable day at the New York Zoölogical Park, where they were cordially welcomed and entertained by Director Hornaday and his Curator of Birds, Mr. Beebe. The ornithological portion of the collections, in common with the wonderful development of this exceptionally flourishing Zoölogical Garden, has made rapid progress during the few years of its existence, in its equipment of buildings and cages as well as in the growth of the collections. The new Bird House, L-shaped, with two large exhibition halls, became available last July. One of these large halls, the Parrot Room, is 65 feet long by 50 feet wide, with a height to the peak of the roof of 36 feet. The roof being of glass insures plenty of light, and their is ample provision for fresh air. Both halls are lined with large cages, in place of the many small ones usually seen in aviaries, the use of large cases allowing several species to be exhibited together, and proving a satisfactory arrangement.

Besides the Great Flying Cage, briefly described in this journal some years ago (Auk, XVI, 1899, p. 96), there are nineteen large out-door enclosures for the hardier species. In the grounds devoted to birds there are, in all some eighty cages, for the most part already well stocked with birds, of great variety and gathered from all parts of the world, American species, however, very properly predominating. Many of the native wild species of the vicinity, having learned that they can here find both safety and plenty of food, have also become voluntary residents of the Park,

contributing thereby greatly to the pleasure of the many bird-lovers who visit the Park for purposes of study.

A paper by Curator Beebe, giving some account of the birds in the Park aviaries, their peculiarities and behavior, and various interesting experiences in their management, which he kindly presented at the A. O. U. Congress, was a good introduction for the members to their subsequent visit, and contributed to the interest with which they later made their acquaintance with the birds themselves in the Garden.

JOHN W. AUDUBON'S 'Western Journal: 1849–1850,' of his notable overland journey from Texas through Mexico and Arizona to California, is being brought out in one volume, 8vo, with map, portrait, and plates, under the competent editorship of Prof. Frank H. Hodder of the University of Kansas, by the Arthur H. Clark Company of Cleveland, Ohio. It will also contain a biographical memoir by his daughter, Miss Maria R. Audubon, who has been able to avail herself of a large amount of material not accessible to any other biographer. The plates illustrating the 'Journal' are from the author's original sketches. Price, $3.00 net.

A NEW work on oölogy by George Krause, entitled 'Oologia universalis palaearctica,' has been announced by Fritz Lehmann of Stuttgart, to appear in 150 Parts, quarto, each part to consist of two or three plates with the text, the publication to be completed if possible in two years. The subscription price is 1s. 6d. per part. The text will be printed in both English and German, so as to give the work greater availability. A plate will be given, wherever possible, for each species, so as to present illustrations of all the principal variations, as shown in the sample plate of the eggs of the European Black-headed Gull (*Larus ridibundus*), where sixteen very distinct color phases are depicted. The author, who is an oölogist of distinction, is also the artist and designer of the plates, and thus will be able to bring to the work the critical eye of the expert. The text will be 'schematic' and brief, giving in a few lines the breeding range, time of hatching, size and number of the eggs, etc., leaving the excellent plates to tell the tale of the color variations.

DURING the last three years the American Museum of Natural History has employed Mr. J. H. Batty to collect for it natural history material in Mexico. His collections consist mainly of birds and mammals, but include many reptiles, some insects and crustaceans, and about 600 photographic negatives. The mammals include large series of the larger species, particularly of carnivores and deer, the felines, from ocelots to jaguars, being especially well represented. The birds number nearly 5000 skins besides several hundreds nests and eggs. The areas quite exhaustively worked include northwestern Durango, southern Sinaloa, and the States of Jalisco and Colima. A report on the southern Sinaloa collection of birds has already been prepared and published in the Museum 'Bulletin,' and an account of the Durango birds is ready for publication, both being by Mr. Waldron DeWitt Miller, assistant in ornithology at the Museum.

Marshall, Margaret E. A Study of the Anatomy of *Phalænoptcrus* Ridgway. (Proc. Amer. Phil. Soc., XLIV, 1905, pp. 213–240, pll. iv–vi.)

Miller, Waldron De Witt. List of Birds collected in Southern Sinaloa, Mexico, by J. H. Batty, during 1903–1904. (Bull. Am. Mus. Nat. Hist., XXI, pp. 339–369. Nov. 24, 1905.)

Palmer, T. S., and Henry Oldys and R. W. Williams, Jr. Game Laws for 1905. A Summary of the Provisions relating to Seasons, Shipment, Sale, and Licenses. U. S. Dept. of Agric., Farmers' Bull. No. 230.

Parrot, Dr. Eine Reise nach Griechenland und ihre ornithologischen Ergebnisse. (Journ. für Orn., 1905, pp. 515–556, 618–669.)

Riley, J. H. (1) A new subspecies of Ground Dove from Mono Island, Porto Rico. (Proc. U. S. Nat. Mus., XXIX, 1905, pp. 171, 172.) (2) On the correct name for the Mountain Thrush of the Lesser Antilles. (Proc. Biol. Soc. Washington, XVIII, p. 185. June 29, 1905.) (3) Descriptions of three new Birds from the Merida Region of Venezuela. (*Ibid.*, pp. 219–222. Oct. 17, 1905.)

Skinner, E. R. A List of the Birds of British India. 12mo, pp. 44, Sept., 1905.

Stejneger, Leonhard. The Birds of the genus *Cinclus* and their Geographical Distribution. (Smithsonian Misc. Coll. (Quart. Issue), XLVII, pp. 421–430. April 5, 1905.)

Verrill, A. Hyatt. Additions to the Avifauna of Dominica. Notes on Species hitherto unrecorded with Descriptions of three New Species and a List of all Birds now known to occur on the Island. 8vo, 32 pp. (Not paged, and without date or place of publication. A copy received Oct. 24, 1905.)

Wolley, John (edited by Alfred Newton). Ootheca Wolleyana: An illustrated catalogue of the Collection of Birds' Eggs formed by the late John Wolley, Jun., M. A., F. Z. S. Part III, Columbæ-Alcæ, 8vo, pp. 383, pll. col. xiv–xxi. London, R. H. Porter, 1905. £2 2s. net.

Wytsman, P. (editor). Genera Avium, Parts i–v, 1905.

American Ornithology, V, Oct.–Dec., 1905.

Annals of Scottish Nat. Hist., Oct., 1905.

Avicultural Magazine, N. S., III, Oct.–Dec., 1905.

Bird-Lore, VII, Sept.-Oct., Nov.-Dec., 1905.

Birds and Nature, XVIII, Oct.–Dec., 1905.

Bulletin British Orn. Club, XVI, Nos. CXVIII, CXIX, and Index and Contents, Vol. XV.

Condor, The, VII, Nos. 5 and 6, 1905.

Emu, The, V, pt. 2, Oct., 1905.

Forest and Stream, LXV, Nos. 14–27, 1905.

Journal of the Maine Orn. Soc., VII, No. 4, Dec., 1905.

Knowledge, N. S., II, No. 11, Oct., 1905.

Ornithologisches Jahrbuch, XVI, Heft 5 and 6, Sept.-Dec., 1905.

Ornithologische Monatsberichte, XIII, Nos. 10–12, Oct.–Dec., 1905.

Ornithologische Monatsschrift, XXX, Nos. 9–11, Sept.–Nov., 1905.

Ottawa Naturalist, XIX, Nos. 7–9, 1905.

Our Animal Friends, XXXIII, Nos. 2–4, Oct.–Dec., 1905.

Proceedings California Acad. Sci., 3d. Ser., Zoölogy, IV, Nos. 2 and 3, Dec., 1905. Also Biographical Memoirs of William Alword and Dr. Harvey Willson Harkness.

Proceedings and Trans. Nova Scotia Inst. of Science, XI, pt. 1, March, 1905.

Science, N. S., Nos. 562–574, 1905.

University of California Publications, Zoölogy, II, No. 4, Oct. 14, 1905.

Warbler, The, 2d Ser., I, No. 4, 1905.

Wilson Bulletin, N. S., XII, Nos. 3 and 4, Sept.–Dec., 1905.

Zoölogist, The, 4th Ser., IX, Nos. 106–108, Oct.–Dec., 1905.

PUBLICATIONS RECEIVED.

Allen, J. A. (1) Supplementary Notes on Birds collected in the Santa Marta District, Colombia, by Herbert H. Smith, with descriptions of Nests and Eggs. (Bull. Am. Mus. Nat. Hist., XXI, pp. 275–295, Oct. 4, 1905.) (2) The Probable Origin of Certain Birds. (Science, N. S., XXII, No. 562, pp. 431–434, Oct. 6, 1905.) (3) The Evolution of Species through Climatic Conditions. (*Ibid.*, No. 569, pp. 661–668, Nov. 24, 1905.)

Beebe, C. William. Two Bird Lovers in Mexico. Houghton, Mifflin & Co., Boston and New York. $3.00.

Bryan, Wm. Alanson. (1) Notes on the Birds of the Waianae Mountains, Oahu. (Occas. Papers Bernice Pauahi Bishop Mus., II, No. 3, 1905, pp. 37–49.) (2) Additional Notes on the Nesting Habits of the Hawaiian Owl. (*Ibid.*, pp. 49, 50.) (3) Description of the Nests and Eggs of *Chlorodrepanis virens* (Gmel.). (*Ibid.*, pp. 51, 52.) (4) Notes on the American Birds collected in the Hawaiian Islands by Mr. Gerrit Wilder. (*Ibid.*, pp. 53–56.) (5) A Bird's Nest of Pele's Hair. (*Ibid.*, pp. 57, 58.) (6) Two undescribed Nests and an Egg of a Hawaiian Bird. (*Ibid.*, pp. 59, 60.) (7) Nest and Eggs of *Heterorhynchus wilsoni* Rots. (*Ibid.*, pp. 61, 62.)

Clark, Austin H. Birds of the Southern Lesser Antilles. (Proc. Boston Soc. Nat. Hist., XXXII, pp. 203–312, Oct., 1904.)

Clark, Hubert Lyman. The Limits of Differences in Specific and Subspecific Distinctions. (Fifth Ann. Rep. Michigan Acad. Sci. for 1903, pp. 216–218.)

Clarke, Wm. Eagle. Ornithological Results of the Scottish National Antarctic Expedition.—I. On the Birds of Gough Island, South Atlantic Ocean. (*Ibid.*, April, 1905, pp. 247–268, pl. vi.)

Dubois, Alphonse. Remarques sur l'Ornithologie l'Etat Independant du Congo, suivies d'une Liste des Espéces recueillies jusqu'ci dans cet Etat. (Ann. du Musée du Congo, I, fasc. 1, pp. 1–36, pll. col. i–xii.)

Fisher, Walter K., and Joseph Grinnell. In Memoriam: Walter E. Bryant. (Condor, VII, 1905, pp. 129–132.)

Grinnell, Joseph. (1) Old Fort Tejon. (Condor, VII, 1905, pp. 9–13). (2) Midwinter Birds on the Mojave Desert. (*Ibid.*, pp. 71–77, 101, 102.)

Hantzsch, Bernhard. Beitrag zur Kenntnis der Vogelwelt Islands. 8vo, Berlin, R. Friedländer und Sohn, 1905.

Harvie-Brown, J. A. Travels of a Naturalist in Northern Europe. 2 vols. 8vo, London, T. Fisher Unwin, 1905.

Judd, Sylvester D. (1) The Bobwhite and other Quails of the United States in their Economic Relations. Biological Survey, Bulletin No. 21, 1905. (2) The Grouse and Wild Turkeys of the United States, and their Economic Value. Biological Survey, Bulletin No. 24.

Langworthy, C. F. The Guinea Fowl and its Use as Food. U. S. Dept. of Agric., Farmers' Bulletin No. 234.

Leverkühn, Paul. Hartwig Friedrich Wiese. Nekrolog mit ornithologischen Beiträgen aus seinen Briefen. (Die Heimat, XV, No. 8 u. 9, 1905.)

McAtee, W. L. (1) Birds of the Vicinity of the University of Indiana. (Proc. Indiana Acad. Sci. for 1904, pp. 65–202, Sept., 1905.) (2) The Horned Larks and their Relation to Agriculture. Biological Survey, Bulletin No. 23, 1905.

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RANDOM NOTES ON PACIFIC COAST GULLS.

BY A. W. ANTHONY.

FROM the ice fields on the north, with the Sabine Gull and Red-legged Kittiwake hovering over the open leads in the pack, to the coast of Mexico, with Heermann's Gull as an ever present feature of the sand beaches, no part of our Pacific coast but can offer gulls in abundance. As yet undisturbed to any extent by the feather hunters, they fairly swarm about the bays and beaches during the winter months, and are but little less noticeable in summer when the nesting birds have retired to the outlying islands, or followed the flocks of geese and cranes to the far north.

No family presents a more interesting study, none are more dainty in plumage, but for some reason there still remains a great deal to be published regarding the life histories of this group. As a rule the species are not easy of identification, even with the bird in hand, a difficulty still further increased when the tyro attempts to segregate the species in a passing flock, presenting different plumages as well as half a dozen or more species of similar size and general appearance. Once having mastered the few difficulties of identification one detects certain characteristics of manner that render most of the species separable with reasonable certainty, even before the markings and other specific characters can be discerned.

In nearly all of the species that have passed under my observation most of these characteristics are of so subtle a nature that I find it well-nigh impossible to define them to my own satisfaction, much less to describe them.

To a casual observer who has seen the gulls of Puget Sound ports contesting with Siwash Indians for garbage, or whose observations have been limited to the gulls that follow the coasting steamers from port to port to feed on the refuse thrown from the galley, the mention of a sea gull suggests nothing so much as a scavenger, on a par with Turkey Vultures and Crows. The other side of the ledger presents a different appearance, for, removed from the degrading influence of garbage dumps, which few if any of our Pacific species seem able to resist, our sea gulls are as dainty and charming in habit and manner as one could wish. *Larus* is, however, an inveterate scavenger, and when found in the region of coast ports can be looked for with certainty about the garbage dumps. I have seen on Puget Sound hundreds of gulls congregated on the dumping grounds, competing with a dozen or more Indians for desirable spoil; the Indians, silent and deliberate, the gulls, clamorous and precipitate, dashing down for choice edibles under the very hands of their human competitors. These conventions were in the winter months and consisted chiefly of Pacific Kittiwake, Glaucous-winged, American Herring, Short-billed, and Bonaparte's, with now and then a Western Gull. They were all equally fearless, and a dozen might have been reached with a stick seven or eight feet long. I doubt, however, that any could have been killed with a stick, for, confiding as they seem, a hostile movement is instantly noted and every gull in the flock as quickly warned. These same birds would be difficult to stalk half a mile from the wharves and shipping; they are quick to learn the limits of protection and by no means averse to accepting the advantages afforded by strict harbor regulations. It is well known that should a gull be shot, whether killed or merely disabled, every gull within sight and hearing will hasten to the spot, and with cries of alarm hover for several minutes over a fallen comrade, nor will they seek safer quarters before a number have been shot. It is a common practice of a certain class of Sunday sportsmen (?) to take advantage of this sympathetic trait, and slaughter wantonly large numbers for the mere sport.

During the winter months companies of from a dozen to forty gulls are in constant attendance on the coasting steamers from Mexico to Puget Sound. These flocks are composed of Western,

Glaucous-winged, Herring, Ring-billed, and Short-billed Gulls. At times the Bonaparte's will join the flock, but not often, as this species seems to prefer the regions of the quiet bays or kelp beds along shore. Along the southern coast Heermann's Gull will be much in evidence, with its slaty plumage and pure white head contrasting strangely with the other species. That some, at least, of these birds follow the vessel for days I have no doubt, for on one occasion I remarked a Glaucous-winged Gull on leaving San Diego. A broken primary hanging from one wing made identification reasonably sure, and for three days the bird was never more than a few hundred yards from the steamer. I lost sight of him at the entrance of San Francisco Bay, and would have been by no means surprised to have found him in the wake of the next steamer bound south. During the summer months there are not so many gulls following the steamers, and those seen are, for the most part, birds of the preceding year. Adults are picked up as the vessel passes the breeding islands but are soon lost again. In sailing off shore also one soon loses the gulls; the large flock picked up at the harbor bar soon begins to drop off, the Ring-bill and other smaller species being the first to leave and the Glaucous-winged and Herring turning back some twenty-five miles at sea, perhaps about the time the saber-like wings of the Black-footed or Short-tailed Albatross are seen on the horizon. I have once or twice picked up a lone Sabine's gull three or four hundred miles off shore, but the vessel offered but a momentary attraction, for after one or two tacks across the wake, as if to read the name and hailing port on the counter, the independent rover was gone.

These same remarks might apply equally to a number of Parasitic Jaegers I have seen after reaching deep water, and the one or two specimens that I secured thus far from shore somewhat upset my previous idea that the bird is entirely parasitic, depending on the gulls and terns for its food; for these deep sea individuals had their stomachs filled to overflowing with fish spawn about the size of No. 5 shot, evidently that of some species spawning on the surface where the bird could pick it up without trouble. I have seen this jaeger in Bering Straits diving for surf smelt, together with Pacific Kittiwakes, but like all of this group, they found it difficult to get below the surface, even with the help of a drop of six or eight feet above

the water, and seldom neglected an opportunity to rob the Arctic Tern or Kittiwake.

In flight all of the species of gulls with which I am familiar habitually carry the feet and tarsi extended behind and closely held along the under surface of the tail-coverts; the feet closed so that the toes and tarsus present an appearance of uniform size throughout the length. The cold winds of winter, however, are apt to be felt by bare feet, and when this happens *Larus* is equal to the occasion; one foot is brought up under the body and the feathers on one side of the belly vigorously kicked forward, the foot and tarsus tucked away out of sight and the feathers allowed to fall back into place. This operation consumes three or four seconds, and it is not until the first foot is snugly tucked away that the other is brought forward to undergo the same process. I have repeatedly witnessed this act during cold winds, and often the gull was but a few feet from me, but so neatly are the feet covered that I could never detect the slightest disarrangement of the plumage or other indication of the hidden members after the feathers had resumed their normal position.

Another feat that I have often witnessed, and as often marveled at, is the ease and grace with which a gull will scratch its head with its foot, or even dislodge a parasite from under its wing with its bill without in any way disturbing its flight. The scratching, which is a very common habit, is accomplished by reaching well back under the wing with the head and forward with the foot, while the wings are held in the normal position and the bird sails.

During the summer months, when herring are running along the coast of southern and Lower California, their migrations are accompanied by every sea bird of the region. In the neighborhood of large schools will be found hundreds of Brandt's and Farralone Cormorants, California Brown Pelicans, Western and Heermann's Gulls, as well as several species of terns and shearwaters, that may be found at that season. It is only when the fish are driven to the surface, by predaceous fish from below or by the cormorants and shearwaters — the only birds above mentioned that seek their food by diving — that the gulls can in any way secure them, and even then they would stand but a small chance were it not for the crowded masses that are at such times driven fairly out of the water. The

Heermann's Gull is by far the most active and successful in catching small fish from the surface, but as a rule will seldom attempt to catch his own dinner if there are any pelicans among the delegates to the convention. There are times when the herring are so thick and so driven from below by the large fish that the pelicans will sit on the surface and snap them up without plunging, as is their normal method, from a height of from ten to thirty feet in the air. If the fish are swimming the deep plunge often carries the bird completely under the surface, and when a second later he bobs up like a cork, he is sure of finding at least one, often two Heermann's Gulls expectantly awaiting the result. If there are two they will usually take up stations on each side and but a foot in front of the pelican, which still holds its huge bill and pouch under the water. It may be that the pelican does not yet know the result of his efforts, for in plunging the pouch it used as a dip net and, if nothing else, it is full of water, which is allowed to escape past the loosely closed mandibles until, perhaps five or ten seconds after the bird made his plunge, a flutter is seen in the pouch, announcing one or more struggling victims. It is still an open question, however, whether they will be eaten by the gull or the pelican, and the latter is seemingly well aware that a herring in the gullet is worth two in the pouch, for it will often wait several seconds for a favorable opportunity for disposing of the catch; the gulls meantime constantly uttering their nasal whining note and keeping well within reaching distance of the pouch. When the critical moment arrives the pelican throws the bill up and attempts to swallow the fish but, with cat-like quickness, one or both gulls make a similar effort, and should the fish in its struggles have thrust its tail or head past the edges of the mandibles, as very often happens, it is an even chance that the gull gets the prize; in fact, I have often seen a Heermann Gull reach well into the pouch and get away with a fish in the very act of slipping down the throat of the pelican. I remember a very amusing incident of this nature I once witnessed on the coast of Lower California. The pelican, after securing a herring, 'backed water' until it was supposed to be far enough from its parasite to venture swallowing it, but as the huge bill was tipped up and opened the gull plunged forward and thrust its entire head and neck into the pouch; the pelican, somewhat quicker than most of its kind,

closed down with a snap and caught the intruder, which in turn had caught the fish; neither would yield any advantages gained, and for perhaps half a minute the pelican towed the gull about by the head, amid most violent protest from a hundred or more gulls assembled, while other pelicans sat like solemn judges, perhaps offering to arbitrate the question. At last a more violent twist than usual on the part of the gull freed him from limbo, minus a few feathers, but in no manner daunted, for a moment later it was following closely in the wake of the same pelican, waiting for it to plunge for another fish, and I never did learn which really swallowed the one in controversy. There would seem to be a certain amount of proprietorship exercised on the part of the gulls over the pelican selected, for they will follow for hours the same bird, and though a hundred or more may be fishing in the same flock they will each be in a great measure attended by one or two, seldom more, gulls, and little attempt is made to leave one pelican in favor of another; such abandoned birds are usually those that have become satisfied and are no longer fishing. I have on several occasions seen large flocks of pelicans fishing at night and the whining cat-like cry of the Heermann's Gull proved that it was, as always, on hand to get his share. The Western Gull will sometimes attempt to emulate the Heermann's, but his greater bulk renders him comparatively harmless to the pelican.

When herring are swimming in compact schools near the surface both Heermann's and Western Gulls secure them by approaching the school from behind and flying near the surface of the water, making repeated, quick dips into the school. The fish seek safety in the depths the instant anything occurs to alarm them, but soon return to the surface, so that the gulls by stalking them from the rear are enabled to approach quite near before the fish are alarmed. As soon as the limits of the school has been passed the gull, rising higher in the air, returns by a wide circuit and again passes over the school from the rear. As the fish all swim in one direction, in a compact mass, these tactics afford the gulls a decided advantage, which seems to be thoroughly understood. I think that the Heermann's Gull secures about one out of five fish that are snapped at and the Western half as many. Royal Terns and the other gulls employ these same methods but to a less extent.

I have often seen gulls of different species on finding a clam on the beach, which was not to be opened by vigorous hammering, carry the bivalve up twenty-five or thirty feet and let it drop. Evidently the bird had the principle but lacked application, for the clam was as often dropped on a soft sand beach as otherwise, and after repeated attempts the gull seemed unable to understand why the shell was not broken. Possibly a few yards distant a rocky beach would have furnished all that was necessary to make the effort successful. On the other hand, I have seen a gull seemingly reason out a more difficult problem, more difficult because not such as would often confront a gull in a state of nature.

I was one day watching some Western Gulls, a few yards from me on a wharf, when a large piece of salted fish was thrown out from an adjacent boat house. It fairly glistened with a thick incrustation of salt, and I was somewhat curious to see if the gulls would eat food so highly seasoned. No sooner had it fallen than it was siezed upon by a gull and as quickly swallowed; but from the surprised actions of the bird it was evidently not to his liking; no sooner had it reached the stomach than it was ordered out again. Dropping the fish on the wharf, the bird eyed it for a moment, turning its head from side to side, and, to judge from its soliloquy, made a number of uncomplimentary remarks on the depraved tastes of mankind that would spoil good fish in that manner. Then picking up the fish it flew down to the water and holding it under the surface shook its head from side to side violently 'sozzeling' the meat about for several seconds. It was then taken back to the wharf, laid down and inspected, and carefully sampled; this time, however, it was not bolted as at first but held for a moment in the mouth and again rejected, and carried back to the water where it was even more roughly laundered. This operation was repeated several times and the piece of fish, which must have weighed four ounces at the outset, was reduced to half that size before it reached a state of freshness that suited the palate of the gull.

During the nesting season the gulls of our Pacific coast play sad havoc with the eggs and young of nearly all of the species of sea birds that nest in exposed situations; nor are the auks and petrels in their burrows immune, for I have seen a Western Gull pull a Cassin's Auklet from a somewhat more shallow burrow than usual

and swallow it with the same gusto and apparent relish with which it bolted the egg a moment later.

It is among the cormorants, however, that the greatest slaughter takes place, and not only are the eggs eaten, but the young are well grown before it is safe for the parents to leave them to brave the *bête noire* of cormorantdom — *Larus*. The advent of man in the region of a cormorant rookery is hailed with delight by every gull on the island but to the poor cormorant it is a calamity of the darkest hue. As the frightened birds leave the nests, which have so far never been for a moment left without the protection of at least one of the parents, the screaming gulls descend in swarms to break and eat the eggs or kill the young, as the case may be. Small cormorants are bolted entire despite their somewhat half-hearted protest; larger birds are dismembered by two gulls assisting in the operation, after the well known manner of barnyard chicks with a worm, and before the adult cormorants have recovered from their fright and returned to protect their homes a colony of several hundred nests will be almost destroyed. I have found young Western Gulls feasting on cormorant squabs half a mile or more from the nests from which they had been abducted.

That gulls drink sea water and can thrive on it, is a fact not to be questioned, but I am of the opinion that when fresh water can be obtained without too much trouble they will drink it in preference. Several years ago I camped for a few days on the beach near a small fresh-water pond; during my stay sea gulls were constantly flying in from sea to drink, bathe, and preen their feathers. Many single birds were noted flying from as far out as the eye could reach direct to the pond; after a few moments of rest and a drink, they returned to the sea in a manner that very plainly indicated that they had business there and had happened in merely to get a little fresh water. It is true, that at this time, the wind was kicking up moderate sea, and while I have seen gulls resting on the waves when they were worse, they do not enjoy rough water, and may have been influenced by the weather conditions more than I supposed.

While the sea gull may have spent the day clam hunting on the mainland beaches, as soon as night falls instinct prompts it to seek an island on which to spend the night. In calm weather the dense kelp beds along the coast of southern California and Lower

California furnish roosting places for numbers of gulls, terns and cormorants, as well as a few herons and shore birds, but the large majority will, if an island is within thirty miles, wing their way to its shelter. Many of their most favored roosting places are but little if any used as nesting grounds.

Some of these winter resorts that I have visited on the coast of Lower California are deserving of more than passing notice. San Geronimo and Nativadad Islands are typical of this class. Both are rather low, sandy islands, almost entirely devoid of vegetation of any kind. A person nearing these islands in the afternoon will notice, while still thirty miles or more distant, long, straggling flocks of cormorants, loose, scattered companies of gulls, and small military squads of California Brown Pelicans, all converging toward one point. As the island grows larger and the sun sinks lower birds become more and more plenty, flocks hurry by with greater frequency and with an air of business that has not marked their actions earlier in the day.

The first cormorants will arrive at the island as early as four o'clock, and taking up their station well back from the beach will be joined by the next flock. The black patch on the gray sand extends its outposts until it meets the brown borders of the pelican colony on the one side, and the snowy expanse of gulls on the other, completely surrounding them and forcing later arrivals of gulls and pelicans to start other camp grounds further along. These again are overtaken and surrounded until by dusk the entire side of the island will be one solid mass of closely packed birds, the white of the gulls and brown plumages of the pelicans standing out in striking contrast to the inky blackness of the cormorants which form over three quarters of the mass. The species all flock separately so far as is possible, and the result is a patchwork of white and gray separated by broad zones of black; even the Brandt's and Farralone Cormorants roost apart, with the somewhat rare Baird's Cormorant still further removed, perching on the low cliffs and rocks along the beach. Stragglers arrive until late in the night; the gulls, in fact, do not all get home until the first of the early risers begin to leave at daybreak. The departure is even more gradual if possible than the arrival of the night before, and it is not until the sun is two hours high that the last of the cormorants leave for the fishing grounds.

A LIST OF THE BIRDS OF TACOMA, WASHINGTON, AND VICINITY.

BY J. H. BOWLES.

THE city of Tacoma is situated upon Puget Sound at the southern extremity of Admiralty Inlet. The land bordering upon the city is somewhat varied in its physical construction, which must account for the local restriction of several species. It may perhaps be best described as an extensive prairie, in many parts densely wooded, and split open at intervals by deep, heavily wooded gulches. At the bottom of these gulches run small fresh water brooks, bordered by a dense growth of nettles and viciously spined devils-club. The maximum altitude is only 410 feet, and there is no appreciable rise in elevation for fifty or more miles on any side until the foothills of the Cascade Mountains are reached.

The section to be treated is bounded on the east by Admiralty Inlet and the Puyallup River, a glacial stream running through a rich valley, on the north and west by Puget Sound, and on the south by numerous small lakes, streams and marshes of fresh water. Extensive tide-flats, with their surrounding marshes, form attractive feeding grounds for the Limicolæ.

The timber consists largely of the Douglas fir, which grows to a height of 250 feet and more, and is found everywhere. Cedar and spruce are also well represented. In the vicinity of water are to be found the cottonwood, maple, alder, and other deciduous trees and shrubs, while numerous parts of the dryest prairie are plentifully dotted with oak.

The temperature is moderate throughout the year, seldom reaching much below the freezing point in winter, and averaging about 65° during the summer. This will probably account for many of the winter residents, as well as for some of the mountain-loving summer residents.

The following list is the result of personal observations of the author during a period of nine years. Several most interesting species, such as the California Clapper Rail (*Rallus obsoletus*), have been shot and accurately described by friends, but have been

omitted because they were not actually under the eye of the writer.

In the identification of many species the author desires to acknowledge the kindness of Dr. A. K. Fisher and Mr. H. C. Oberholser of the Biological Survey, U. S. Dept. of Agriculture.

1. **Æchmophorus occidentalis.** WESTERN GREBE.— Very common migrant and winter resident. Flocks of hundreds assemble in October to fish in the tide-rips.

2. **Colymbus holbœlli.** HOLBŒLL'S GREBE.— Common in migrations and winter, but not so numerous as the above.

3. **Colymbus auritus.** HORNED GREBE.— Common during migrations and in winter.

4. **Podilymbus podiceps.** PIED-BILLED GREBE.— Common summer resident. Rare in winter. Breeds.

5. **Gavia imber.** LOON.— Not uncommon summer resident in the higher altitudes. Breeds.

6. **Gavia lumme.** RED-THROATED LOON.— Not uncommon in winter.

7. **Ceratorhina monocerata.** RHINOCEROS AUKLET.— Rare visitor. Shot on Sept. 21, 1902.

8. **Brachyramphus marmoratus.** MARBLED MURRELET.— Common throughout the year on the Sound. Undoubtedly breeds.

9. **Cepphus columba.** PIGEON GUILLEMOT.— Common throughout the year. These birds dig deep holes in the face of a sandy cliff, laying their eggs on the bare sand at the end.

10. **Uria troile californica.** CALIFORNIA MURRE.— Not rare during migrations along the Sound.

11. **Stercorarius parasiticus.** PARASITIC JAEGER.— Not uncommon during migrations along the Sound.

12. **Larus glaucescens.** GLAUCOUS-WINGED GULL.— Very common from October to May. A few spend the summer, but I have seen no indications of their nesting.

13. **Larus occidentalis.** WESTERN GULL.— Common during the winter.

14. **Larus californicus.** CALIFORNIA GULL.— Common during migrations.

15. **Larus brachyrhynchus.** SHORT-BILLED GULL.— Common in winter.

16. **Larus heermanni.** HEERMANN'S GULL.— Rather common in summer and fall though we have seen no signs of nesting.

17. **Larus philadelphia.** BONAPARTE'S GULL.— Very common spring and fall migrant. In the fall we have seen large numbers, in company with Nighthawks, catching insects on the wing over land where the timber had been cut off. An examination of several stomachs showed them to be crammed with insects only.

18. **Phalacrocorax penicillatus.** BRANDT'S CORMORANT.— Common during migrations and in winter.

18*a*. **Phalacrocorax dilophus cincinatus.** WHITE-CRESTED CORMORANT.— Probably not an uncommon visitor on Puget Sound. Two were seen near Tacoma on Feb. 9, 1906.

19. **Pelecanus erythrorhynchos.** AMERICAN WHITE PELICAN.—Very rare migrant.

20. **Merganser americanus.** AMERICAN MERGANSER.— Common in spring, fall and winter. A few pairs remain to breed.

21. **Merganser serrator.** RED-BREASTED MERGANSER.— Common migrant.

22. **Lophodytes cucullatus.** HOODED MERGANSER.— Moderately common, except in winter. Breeds.

23. **Anas boschas.** MALLARD.— Common resident. Breeds.

24. **Chaulelasmus streperus.** GADWALL.— Rare migrant.

25. **Mareca americana.** BALDPATE.— Very common, except in summer when it leaves.

26. **Nettion carolinensis.** GREEN-WINGED TEAL.— Very common except in summer when it leaves.

27. **Querquedula discors.** BLUE-WINGED TEAL.— Very rare migrant. A pair seen May 28, 1905.

28. **Spatula clypeata.** SHOVELLER.— Common, excepting in summer when it leaves.

29. **Dafila acuta.** PINTAIL.— Common from October to May, when it leaves.

30. **Aix sponsa.** WOOD DUCK.— Rather rare summer resident. Breeds.

31. **Aythya americana.** REDHEAD.— Rare migrant, keeping to the fresh water.

32. **Aythya vallisneria.** CANVAS-BACK.— Moderately common in winter and spring.

33. **Aythya marila.** AMERICAN SCAUP DUCK.— Common from November to May, when it leaves.

34. **Aythya affinis.** LESSER SCAUP DUCK.— Not so common as *A. marila*, but seen at the same seasons.

35. **Aythya collaris.** RING-NECKED DUCK.— Rather rare migrant.

36. **Clangula clangula americana.** AMERICANA GOLDEN-EYE.—Common from November until May.

37. **Charitonetta albeola.** BUFFLE-HEAD.— Common from November until May, when it leaves.

38. **Harelda hyemalis.** OLD-SQUAW. — Moderately common in spring only.

39. **Histrionicus histrionicus.** HARLEQUIN DUCK.— Rather rare, but regular migrant.

39*a*. **Somateria v-nigra.** PACIFIC EIDER. - A flock of seven, and two other females, were seen on Jan. 6, 1906. They were very wild, and none was taken, but the two females were approached to within eighty yards as they were feeding in a muddy slough.

40. **Oidema americana.** AMERICAN SCOTER.— Rather rare migrant.

41. **Oidemia deglandi.** WHITE-WINGED SCOTER.— Very common, except in summer when only a few remain.

42. **Oidemia perspicillata.** SURF SCOTER.— Common from October to May, when it leaves.

43. **Anser albifrons gambeli.** AMERICAN WHITE-FRONTED GOOSE.— Fairly common migrant.

44. **Branta canadensis hutchinsii.** HUTCHIN'S GOOSE.— Common migrant.

45. **Branta canadensis occidentalis.** WHITE-CHEEKED GOOSE.— Common migrant.

46. **Branta nigricans.** BLACK BRANT.— Regular, though not common in migrations along the Sound.

47. **Olor columbianus.** TRUMPETER SWAN.— Rather rare, but regular migrant.

48. **Botaurus lentiginosus.** AMERICAN BITTERN.— Rare, but regular migrant.

49. **Ardea herodias fannini.** NORTHWEST COAST HERON.— Common resident. Breeds.

50. **Grus mexicana.** SANDHILL CRANE.— Rather common migrant.

51. **Rallus virginianus.** VIRGINIA RAIL.— Common summer resident. Breeds.

52. **Porzana carolina.** CAROLINA RAIL; SORA.— Summer resident and breeds, but not so common as *R. virginianus*.

53. **Porzana jamaicensis.** BLACK RAIL.— Very rare migrant. Saw two on Nov. 10, 1900.

54. **Fulica americana.** AMERICAN COOT.— Common resident. Breeds.

55. **Phalaropus lobatus.** NORTHERN PHALAROPE.— Common fall migrant, but have never seen it in the spring.

56. **Gallinago delicata.** WILSON'S SNIPE.— Common migrant, a few spending the winter. Possibly breeds.

57. **Macrorhamphus scolopaceus.** LONG-BILLED DOWITCHER.— Rather common migrant.

58. **Tringa canutus.** KNOT.— Rare migrant. One shot in Sept., 1897.

59. **Actodromas maculata.** PECTORAL SANDPIPER.— A regular but not at all common migrant.

60. **Actodromas minutilla.** LEAST SANDPIPER.— Common migrant.

61. **Pelidna alpina sakhalina.** RED-BACKED SANDPIPER.— Common during migrations and in winter.

62. **Ereunetes occidentalis.** WESTERN SANDPIPER.— Very common migrant.

63. **Totanus melanoleucus.** GREATER YELLOW-LEGS.— Regular migrant, though not common.

64. **Actitis macularia.** SPOTTED SANDPIPER.— Rather common except in winter. Nests on every stream in the mountains.

65. **Numenius hudsonicus.** HUDSONIAN CURLEW.— Very common spring migrant, but never seen in the fall.

66. **Squatarola squatarola.** BLACK-BELLIED PLOVER.— Rather common during migrations. Have shot them on the tide-flats and open prairies.

67. **Oxyechus vociferus.** KILLDEER.—Common summer resident, but scarcer in winter. Breeds.

68. **Ægialitis semipalmata.** SEMIPALMATED PLOVER.— Rather rare migrant.

69. **Colinus virginianus.** BOB-WHITE.— An introduced species. Resident and rapidly increasing. Breeds.

70. **Oreortyx pictus.** MOUNTAIN PARTRIDGE.— An introduced species. Common resident and breeds. Specimens are found that grade into almost typical *O. p. plumiferus*.

71. **Lophortyx californica.** CALIFORNIA PARTRIDGE.— An introduced species and breeds. Common resident. Specimens have been taken that grade into almost typical *L. c. vallicola*.

In connection with Nos. 70 and 71, in both it seems probable that birds were introduced here from different localities in California and that the closely allied forms have interbred.

72. **Dendragapus obscurus fuliginosus.** SOOTY GROUSE.— Common resident and breeds. In December and January these birds confine themselves to the tops of tall firs, feeding on the buds.

73. **Bonasa umbellus sabini.** OREGON RUFFED GROUSE.— Common resident. Breeds, laying larger eggs than *B. umbellus* of the east.

74. **Phasianus** . MONGOLIAN PHEASANT.— This introduced species is becoming fairly common in some sections, but its size and brilliant coloring is fatal to it with the pot-hunters. Breeds.

75. **Columba fasciata.** BAND-TAILED PIGEON.— A rather rare resident, though formerly common. Breeds.

76. **Zenaidura macroura.** MOURNING DOVE.— Very rare visitor during the summer. Saw one on June 14, 1905.

77. **Cathartes aura.** TURKEY VULTURE.— Not uncommon summer resident. Breeds.

78. **Circus hudsonius.** MARSH HAWK.— Not uncommon during migrations.

79. **Accipiter velox.** SHARP-SHINNED HAWK.— Not uncommon during migrations.

80. **Accipiter cooperii.** COOPER'S HAWK.— Rare summer resident. Breeds. Nest with five fresh eggs found May 20, 1905.

81. **Accipiter atricapillus striatulus.** WESTERN GOSHAWK.— Rare summer resident. I feel positive that it breeds.

82. **Buteo borealis calurus.** WESTERN RED-TAIL.— Rare summer resident. Probably breeds.

83. **Aquila chrysaëtos.** GOLDEN EAGLE.— Rare migrant. Saw a pair on April 20, 1905.

84. **Haliæetus leucocephalus alascanus.** NORTHERN BALD EAGLE.— Rather rare resident. Breeds. Formerly abundant. Possibly *H. leucocephalus.*

85. **Falco peregrinus anatum.** DUCK HAWK.—Not uncommon during migrations on the duck marshes.

86. **Falco columbarius.** PIGEON HAWK.— Have seen but one example, which I shot April 13, 1897.

87. **Falco columbarius suckleyi.** BLACK MERLIN.— Not uncommon during migrations. Rare but regular summer resident. Breeds.

88. **Falco sparverius phalœna.** DESERT SPARROW HAWK.— Common summer resident, but rare in winter. Breeds.

89. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.— Rare summer resident, though formerly it nested on every fresh water lake. Breeds.

90. **Asio wilsonius.** LONG-EARED OWL.— A rare visitor during migrations.

91. **Asio accipitrinus.** SHORT-EARED OWL.— Not uncommon during migrations.

92. **Syrnium occidentale caurinum.** NORTHERN SPOTTED OWL.— Have seen this bird but once, when some boys pointed it out to me in a small tree. It was very tame, but its sight was perfect. Seen Oct. 19, 1898.

93. **Cryptoglaux acadica scotæ.** NORTHWEST SAW-WHET OWL.— Have seen this bird but once, Oct. 15, 1904, when it was shot. Their retiring habits possibly account for their seeming scarcity.

94. **Megascops asio kennicottii.** KENNICOTT'S SCREECH OWL.—Not uncommon resident and a terror to small birds and mice. Breeds.

95. **Bubo virginianus saturatus.** DUSKY HORNED OWL.— Common in fall and winter, but I have never heard them utter a note.

96. **Nyctea nyctea.** SNOWY OWL.— Rare. During the winter of 1896–97 large numbers visited the tide-flats around Tacoma. They were exceedingly wary and could see perfectly, in spite of the glare of bright sunshine on the snow.

97. **Speotyto cunicularia hypogæa.** BURROWING OWL.— Have seen it but once, Sept. 23, 1899. A visitor from east of the Cascades.

98. **Glaucidium gnoma californicum.** CALIFORNIA PYGMY OWL.— Not uncommon resident and an unprincipled little bird killer. Breeds.

99. **Coccygus americanus occidentalis.** CALIFORNIA CUCKOO.— Rather rare summer resident, of local distribution. Nests in dense thickets.

100. **Ceryle alcyon.** BELTED KINGFISHER.— Resident. Common in summer, but scarce in winter. Breeds.

101. **Dryobates villosus harrisii.** HARRIS'S WOODPECKER.— Not uncommon resident of the higher elevations. Nests always in a dead fir.

102. **Dryobates pubescens gairdnerii.** GAIRDNER'S WOODPECKER.— Not uncommon resident. Always nests in a dead deciduous tree near water.

103. **Sphyrapicus ruber notkensis.** NORTHERN RED-BREASTED SAPSUCKER.— Not uncommon in summer in the Puyallup Valley. Breeds. Rare in winter, but of regular occurrence.

104. **Ceophlœus pileatus abieticola.** NORTHERN PILEATED WOODPECKER.— A rather rare resident of the fir timber. Breeds.

105. **Asyndesmus torquatus.** LEWIS'S WOODPECKER.— Common summer resident of the Puyallup Valley. Breeds.

106. **Colaptes cafer collaris.** RED-SHAFTED FLICKER.— Not uncommon migrant. Breeds east of the Cascades.

107. **Colaptes cafer 'saturatior.** NORTHWESTERN FLICKER.— Resident. Common in summer, but scarcer in winter. Nests everywhere.

108. **Chordeiles virginianus.** NIGHTHAWK.— Common summer resident. Often lays its eggs on the roofs of houses in the city.

109. **Cypseloides niger borealis.** BLACK SWIFT.— Not uncommon in spring and fall, and always seen in flocks of six or more.

110. **Chætura vauxii.** VAUX'S SWIFT.— Not uncommon summer resident, breeding regularly in the Puyallup Valley. Nests in the hollow tops of dead cotton-wood trees, 100 feet or more from the ground.

111. **Selasphorus rufus.** RUFOUS HUMMER.— Common summer resident and one of our earliest migrants. Arrives late in March and lays the first set of eggs by April 15, before the last snow has gone.

112. **Selasphorus alleni.** ALLEN'S HUMMER.— Have seen this bird only in spring migrations, when it is far from common.

113. **Stellula calliope.** CALLIOPE HUMMER.— A rare summer visitor from the Cascades. Saw one in Wright Park on May 10, 1905.

114. **Tyrannus tyrannus.** KINGBIRD.— A rare summer visitor. Not uncommon in summer east of the Cascades.

115. **Tyrannus verticalis.** ARKANSAS KINGBIRD.—A rare summer visitor. Common summer resident east of the Cascades.

116. **Myiarchus cinerascens.** ASH-THROATED FLYCATCHER. — A very rare summer visitor. Saw a pair on May 24, 1905. Have found it nesting at North Yakima, east of the Cascades.

117. **Sayornis saya.** SAY'S PHŒBE.— A rare summer visitor from east of the Cascades.

118. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.— An uncommon though regular summer resident. Breeds.

119. **Contopus richardsonii.** WESTERN WOOD PEWEE.— Rather common during migrations, but a rare summer resident. Breeds.

120. **Empidonax difficilis.** WESTERN FLYCATCHER.— Common summer resident. Builds its nest anywhere, in the midst of the city or in the deepest wood, six inches up in a fern or forty feet up in a fir.

121. **Empidonax traillii.** TRAILL'S FLYCATCHER.— Common summer resident. Essentially a bird of the lowlands, seldom encroaching on the range of *E. difficilis*, which prefers higher elevations. Breeds.

122. **Empidonax hammondi.** HAMMOND'S FLYCATCHER.— Not common, but a regular summer resident. Breeds.

123. **Otocoris alpestris strigata.** STREAKED HORNED LARK.— Common summer resident of the dryest prairies. Breeds.

124. **Pica pica hudsonica.** AMERICAN MAGPIE.— Rather common migrant from east of the Cascades. Rarely seen in summer.

125. **Cyanocitta stelleri.** STELLER'S JAY.— Rather common resident. Breeds.

126. **Perisoreus obscurus.** OREGON JAY.— A winter visitor from the Cascades, where it is common in summer.

127. **Corvus corax sinuatus.** AMERICAN RAVEN.— A rare visitor, only seen in summer. One seen May 6, 1905.

128. **Corvus brachyrhynchos.** AMERICAN CROW.— Common resident. Breeds. Possibly this bird may be *hesperis*.

129. **Corvus caurinus.** NORTHWEST CROW.— Common resident. This small species seems to confine itself altogether to the salt water and tide flats. Breeds in small colonies.

130. **Molothrus ater.** COWBIRD.— An extremely rare summer visitor.

131. **Agelaius phœniceus caurinus.** NORTHWESTERN RED-WING.— Common resident, though most plentiful in summer. Breeds.

132. **Sturnella magna neglecta.** WESTERN MEADOWLARK.— Common resident, though less plentiful in winter. Breeds.

133. **Icterus bullocki.** BULLOCK'S ORIOLE.— A rare summer visitor from east of the Cascades.

134. **Euphagus cyanocephalus.** BREWER'S BLACKBIRD.— Common resident. Very erratic in nesting habits, building sometimes three feet up in a bush, and again selecting some cavity 150 feet up in a dead fir.

135. **Hesperiphona vespertina montanus.** WESTERN EVENING GROSBEAK.— Resident throughout the year, though more common some years than others. During the past summer (1905) they could be found at any time.

136. **Carpodacus purpureus californicus.** CALIFORNIA PURPLE FINCH.— Common resident, though most plentiful in summer. Breeds.

137. **Loxia curvirostra minor.** AMERICAN CROSSBILL.— Distribution exactly the same as that of the Western Evening Grosbeak.

138. **Acanthis linaria.** REDPOLL.— I have only one record of this species (Nov. 1900). It is common east of the Cascades.

139. **Astragalinus tristis salicamans.** WILLOW GOLDFINCH.—Rather common in summer, though formerly rare. Breeds.

140. **Spinus pinus.** PINE SISKIN.— Common throughout the year; seen at all seasons in large flocks. At any time from April 15 to Sept. 1 pairs will detach themselves from the main flocks and raise their broods.

141. **Passer domesticus.** ENGLISH SPARROW.— Common resident, unfortunately increasing every year. Breeds.

142. **Passerina nivalis.** SNOWFLAKE.— A rare winter visitor.

143. **Pocœcetes gramineus affinis.** OREGON VESPER SPARROW.— Common summer resident, of local distribution. Breeds.

144. **Passerculus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.— Common summer resident. Breeds.

145. **Zonotrichia leucophrys nuttalli.** NUTTALL'S SPARROW.— Common summer resident. Breeds.

146. **Zonotrichia coronata.** GOLDEN-CROWNED SPARROW.— Common migrant. Have seen them as late as May 25, but doubt if they breed.

147. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.— Very abundant summer resident. Breeds.

148. **Junco hyemalis oreganus.** OREGON JUNCO.— Formerly common resident, but now very rare in summer. Breeds.

149. **Junco hyemalis shufeldti.** SHUFELDT'S JUNCO.— Formerly rare, but now a common summer resident. Breeds.

150. **Melospiza cinerea morphna.** RUSTY SONG SPARROW.— Abundant resident. Breeds.

151. **Passerella iliaca unalaschensis.** TOWNSEND'S SPARROW.— Rather rare spring and fall migrant. Possibly *P. i. fuliginosa.*

152. **Pipilo maculatus oregonus.** OREGON TOWHEE.— Common resident. Breeds.

153. **Zamelodia melanocephala.** BLACK-HEADED GROSBEAK.— Rare summer resident. Breeds.

154. **Cyanospiza amœna.** LAZULI BUNTING.— Rare summer visitor.

155. **Piranga ludoviciana.** LOUISIANA TANAGER.— Common summer resident. Breeds.

156. **Progne subis.** PURPLE MARTIN.— Common summer resident. Breeds. It is possible that these birds are *P. s. hesperia*, but, coming only in the city, one cannot shoot them.

157. **Petrochelidon lunifrons.** CLIFF SWALLOW.— Common summer resident along the outskirts of the city. Breeds.

158. **Hirundo erythrogastra.** BARN SWALLOW.— Common summer resident. Breeds often in the city, building its nests on the outside of houses under the eaves.

159. **Iridoprocne bicolor.** TREE SWALLOW.— Common summer resident, breeding mostly in trees in the country.

160. **Tachycineta thalassina lepida.** VIOLET-GREEN SWALLOW.— Common summer resident, nesting mostly in and around houses.

161. **Riparia riparia.** BANK SWALLOW.— Rather rare summer resident, always nesting in small colonies.

162. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.—Common summer resident. Nests chiefly along the salt water, often digging its burrow within a foot or two of that of a Pigeon Guillemot.

163. **Ampelis cedrorum.** CEDAR WAXWING.— Common resident. Breeds in both high and low localities.

164. **Lanius borealis.** NORTHERN SHRIKE.— Not uncommon during winter and in migrations. Frequently heard singing.

165. **Vireo olivaceus.** RED-EYED VIREO.— Rare summer visitor. While collecting in the Puyallup Valley with my brother on June 23, 1899, we saw and heard at least six.

166. **Vireo gilvus swainsonii.** WESTERN WARBLING VIREO.— Common summer resident, nesting nearer the ground than *V. gilvus.*

167. **Vireo solitarius cassinii.** CASSIN'S VIREO.— An irregular summer resident, sometimes quite common. Breeds.

168. **Vireo huttoni obscurus.** ANTHONY'S VIREO.— A regular but rare summer resident. The only nest I have heard of was found by my brother, Mr. C. W. Bowles, on June 21, 1897. It contained two eggs, slightly incubated, and was collected with the female parent.

169. **Helminthophila rubricapilla gutturalis.** CALAVERAS WARBLER. — Not an uncommon summer resident. Nests only on the oak dotted prairies.

170. **Helminthophila celata lutescens.** LUTESCENT WARBLER.— Common summer resident. The first migratory warbler in spring, arriving early in April. Nests on bushy hillsides and in the valley.

171. **Dendroica æstiva.** YELLOW WARBLER.— Abundant summer resident. Nests anywhere it can find water.

172. **Dendroica coronata.** MYRTLE WARBLER.— An irregular fall migrant, very numerous some years, the fall of 1905 for example. Have never seen it in spring.

173. **Dendroica auduboni.** AUDUBON'S WARBLER.— Rather common summer resident, a few wintering. Nests only in firs, never at a lower altitude than 300 feet.

174. **Dendroica nigrescens.** BLACK-THROATED GRAY WARBLER.— A summer resident, some years abundant. Seldom occurs at a lower altitude than 300 feet. Nests in the tall firs.

175. **Dendroica townsendi.** TOWNSEND'S WARBLER.— A rare summer resident of the higher altitudes.

176. **Dendroica occidentalis.** HERMIT WARBLER.— Not uncommon in summer, but very locally distributed. Seen only above 300 feet altitude where it stays mostly in the tallest firs. Took a set of five slightly incubated eggs on June 11, 1905.

177. **Geothlypis tolmiei.** MACGILLIVRAY'S WARBLER. — Not an uncommon summer resident in the thickets at about 300 feet.

178. **Geothlypis trichas arizela.** PACIFIC YELLOW-THROAT.— Common along the edges of certain fresh water marshes in all altitudes during summer, but for some reason absent in many similar locations.

179. **Icteria virens longicauda.** LONG-TAILED CHAT.— Rare summer visitor. One seen June 4, 1905.

180. **Wilsonia pusilla chryseola.** GOLDEN PILEOLATED WARBLER.— Not an uncommon summer resident in the thickets of the Puyallup Valley. Occasionally nests as high as 300 feet.

181. **Anthus pensilvanicus.** AMERICAN PIPIT.— Common in the spring and fall migrations.

182. **Cinclus mexicanus.** AMERICAN DIPPER.— Not uncommon along the streams in spring and fall. Breeds in the foothills.

183. **Thryomanes bewickii calophonus.** PACIFIC BEWICK WREN.— Rather common resident, retiring to the salt marshes in winter. Breeds.

184. **Troglodytes aëdon aztecus.** WESTERN HOUSE WREN.— Common summer resident. Nests in the city, and in the woods far from houses.

185. **Olbiorchilus hiemalis pacificus.** WESTERN WINTER WREN.— Common resident. Breeds in the densest thickets of the deep gulches, thus making the nest very difficult to find.

186. **Telmatodytes palustris paludicola.** TULE WREN.— Common summer resident; not rare in winter. Breeds.

187. **Certhia familiaris occidentalis.** TAWNY CREEPER.— Rather rare resident. Nest with six well grown young found May 17, 1905.

188. **Sitta carolinensis aculeata.** SLENDER-BILLED NUTHATCH.— Not common, though resident. Breeds.

189. **Sitta canadensis.** RED-BREASTED NUTHATCH.— Not an uncommon resident. Nests close to fresh water.

190. **Parus atricapillus occidentalis.** OREGON CHICKADEE.— Common in summer, but scarce in winter. Nests in dead deciduous trees in the vicinity of fresh water.

191. **Parus rufescens.** CHESTNUT-BACKED CHICKADEE.— Common resident. Nests in dead fir stumps at a distance from water.

192. **Psaltriparus minimus saturatus.** PUGET SOUND BUSH-TIT.— Common resident. Breeds, nesting at all altitudes in any kind of bush or tree.

193. **Regulus satrapa olivaceus.** WESTERN GOLDEN-CROWNED KINGLET.— Common resident. Breeds among the densest firs, thus making the finding of a nest simply a matter of accident.

194. **Regulus calendula grinnelli.** SITKA RUBY-CROWNED KINGLET. — A common winter resident, but have never seen it later than April.

195. **Myadestes townsendii.** TOWNSEND'S SOLITAIRE.— An occasional though not common winter resident.

196. **Hylocichla ustulatus.** RUSSET-BACKED THRUSH.— A very abundant summer resident. Nests at all elevations.

197. **Hylocichla guttata nana.** DWARF HERMIT THRUSH.— Rather common during migrations. Breeds in the mountains.

198. **Merula migratoria migratoria.** AMERICAN ROBIN.— Not uncommon from late fall until early spring. Have never seen it in summer.

199. **Merula migratoria propinqua.** WESTERN ROBIN.— Abundant summer resident, though less common in winter. Breeds.

200. **Ixoreus naevius.** VARIED THRUSH.— Common during migrations and not uncommon in winter. A few breed in the deep gulches at about 400 feet altitude.

201. **Sialia mexicana.** WESTERN BLUEBIRD.— Common summer resident, a few remaining throughout the year. Nests in bird houses in the city, and in trees far from civilization.

WHERE DOES THE LARGE-BILLED SPARROW SPEND THE SUMMER?

BY A. W. ANTHONY.

IN THE January issue of 'The Auk,' 1905, Mr. Joseph Grinnell has given us some interesting notes on the Large-billed Sparrow (*Passerculus rostratus*), and called attention to the fact that this species, which is in winter abundant all along the coast of southern California and the northern half of Lower California, has until the present time succeeded in keeping its breeding ground so well hidden that with all of the dozens of trained collectors that have studied the species on its range, none seem to be able to state where it nests.

It is no doubt true that there has been no authentic record of eggs found or nests taken, but the region is so well known both north and south of the winter home of the Large-billed Sparrow, and the local lists for the coast from San Francisco south are so complete, that I think we can locate the summer and breeding range of this species within fairly definite limits and with reasonable accuracy. I think that perhaps the shortest route to the probable nesting grounds will be by a process of elimination of some of those sections where it does not nest.

So far the most northern record for the species is Santa Cruz, nor is it at all common north of Point Conception, I think. If the nesting ground were to be sought for in the north, certainly some of the many collectors in the region of San Francisco would have reported migrating birds, and as none have been recorded, we may for the moment consider the coast region of the north as out of the nesting habitat.

As for the winter range, anyone who has collected in the tide flats about San Diego Bay can testify that here at least they swarm until March 5 or later. Such cover would seem to best suit the requirements of the species, for I have found them equally abundant in all similar localities south of San Diego, notably San Quintin, Lower California, and Todas Santos Bay, south of Ensenada.

That there is a regular migration is attested by their appearance

in September on all of the coast islands that I have visited in that season from San Clemente south as far as Natividad, and including Cerros and Los Benitos. On this last is found a subspecies (*P. r. sanctorum*) that no doubt was derived from *rostratus* that in the past lingered on this island to nest and in time became resident. The Large-billed and San Benito Sparrows are equally abundant along the beaches, gleaning a livelihood from beds of stranded kelp, over which they skurry like mice in search of insects and small marine life.

Nests of *sanctorum* were found by both R. C. McGregor and myself, one being in a low bush about one foot from the ground, and the others well hidden in shallow depressions in the soil and overhung by vegetation, very similar in fact to the nests of *beldingi*, except that the Benito Islands offer no tide flats or marsh lands and *sanctorum* is obliged to nest on dry ground.

Nor does *rostratus* nest on any of the islands of the west coast of Lower California, as my visits to those islands have been frequent, and I have found the species as a winter visitant only.

The ocean beaches as far as Cape St. Lucas offer also winter range for *rostratus*, but while they are by no means rare on both sandy and rocky shores, they are nowhere really abundant away from the tide flats of the bays.

So far as an inland breeding range is to be considered, I have never seen a Large-billed Sparrow over half a mile from tide water, and one that wanders over a few hundred yards from the tide flats or beach is at once noticed as out of place by those who are familiar with the species, which is, according to my experience, strictly littoral.

So much for a few of the places that, for the purposes of this article, it may be considered that the species does not breed. As for a breeding range in a distant or southern country I will presently show that such is at least highly improbable.

San Ramon is a Mexican ranch on the coast of Lower California about 25 miles north of San Quintin Bay. Mr. Grinnell has quoted me as reporting a nesting *rostratus* from this point but would seem to doubt the validity of the record. At the present writing I have a very distinct recollection of the bird mentioned and a glance at the conditions surrounding that region may throw some light on

the question at issue. The beach at this point was, in 1887, thickly covered by drift wood, which reached back some two hundred feet to the sand dunes and was often piled up several feet in height. Through these tangled piles of drift *rostratus* were running, dodging in and out very much after the manner of Rock Wrens in a pile of rocks, and it was one of the many seen here that I shot and recorded as a nesting bird on the evidence of a swollen and bare breast.

I was at that time unfamiliar with the fauna of the coast, and supposed that I would find plenty of nests at San Quintin, my next camp. I allowed the opportunity to pass, and in several years spent in Lower California never again collected at San Ramon. Several years later, in discussing the possible nesting grounds of this species with Mr. A. M. Ingersoll of San Diego, he told me of seeing a Large-billed Sparrow collecting the larva of the flesh fly about the carcass of a cow near San Diego. The very businesslike way in which the bird flew away, maintaining a direct flight as far as his eye could follow, led him to believe that it went direct to a nest of young, but at such a distance that he was unable to locate it. There is no doubt in my mind that Mr. Ingersoll did happen on a nesting bird, but perhaps one somewhat out of the nesting ground proper, for I have since then, on two or three occasions, found families of young that were still fed by their parents on the beach near Ocean Side, not far from where Mr. Ingersoll found the bird that I recorded. The fact that these young were still in groups of three to four, and still fed by one or both parents, would argue that the nesting ground was not many miles distant.

In searching for a possible breeding ground my thoughts harked back to the San Ramon capture, and I recalled that a few hundred feet back from the beach occurred a number of small lagoons caused by the river being cut off from entrance to the Pacific by a series of sand dunes and bars, a very common condition and one found at the mouths of many of the shallow 'rivers' of southern and Lower California. These shallow ponds, extending for perhaps half a mile along the beach, were thickly grown along the banks with tules, furnishing cover for many of the birds of that region. During the few hours spent in collecting at this camp I paid no attention to this cover, being more interested elsewhere, so I am unable to say whether *rostratus* inhabited these thickets, but the piles of drift

I have mentioned were but a stone's throw distant, and from what I now know of the habits of the species, I would expect to find the nest in just that character of cover rather than in the drift wood where the birds were feeding.

Tule swamps are found bordering the beach, at the mouths of several of the streams north of San Diego but so far as I know no one has reported on the birds nesting there.

As Mr. Grinnell has said, "it might not be a sin to speculate somewhat in this regard." Can we not by defining the north, east, and south boundaries beyond which we are reasonably sure the species does not pass, mark the probable summer habitat? It is true the absence of summer records would reduce this more or less to a matter of individual opinion, and my own opinion, based on more than ten years' observation, is that the Large-billed Sparrow is resident along that part of the coast south of San Pedro to San Ramon, Lower California, and that it merely retires to its nesting ground a few miles distant to return in August. An overflow migration carries the species to the islands and as far as Cape St. Lucas, but I very much doubt any being found nesting south of San Ramon, or possibly the valley of the Rosario River about fifty miles south of San Quintin.

If we accept this as the probable summer habitat it remains to find the nesting ground, and I agree with Mr. Grinnell that it is not in the salt marshes. They have been well explored, and from San Quintin north *beldingi* is the only member of the genus to be found in these localities after the nesting begins.

FURTHER NOTES ON THE BIRDS OF LEON COUNTY, FLORIDA.

BY R. W. WILLIAMS, JR.

A YEAR ago I published a preliminary list of the birds of Leon County, Florida,[1] which comprised the species I had then observed, with notes of such facts connected with them as seemed of special interest. As subsequent observations, besides materially extending this list, have added information concerning the birds already listed, it seems desirable to publish a supplementary article on the birds of the county.

Most of the information here recorded was gathered in the fall of 1904 during early morning excursions through McDougall's pasture and to a thickly wooded hill a quarter of a mile from the city limits, which I have designated in my journals, and likewise do here, as 'Lively's woods,' from the name of the owner. Birds found here are individually and specifically so numerous that a brief description of the locality may be interesting. McDougall's pasture, ornithologically the most productive limited area I have ever seen, covers about sixty acres. A small cypress swamp, with its marshes, occupies the center, from which, on the eastern and western sides gradually rises a symmetrical, grass-carpeted hill, that on the western reaching its highest elevation in the back yard of the owners of the pasture, just on the line that marks the eastern limits of Tallahassee. The eastern one terminates (and the country thence assumes a level condition) at the western edge of Lively's woods. This woodland occupies an area of about thirteen acres and is composed largely of such trees as the live and water oaks, sweet gums, hickories, pines, magnolias, persimmons, and hollies, none of which attain any great size and the oaks are rather remarkable for their slenderness and the scarcity of their lower branches or twigs, the growth of which has developed principally at and near the top. Among the leaves and branches of these trees I found the migrating warblers very abundant and was surprised to note

[1] Auk, Vol. XXI, 1904, pp. 449–462.

the large quantity of insect food they procured there. The minor shrubbery is in places quite thick and furnishes a home for the more terrestrial species. The Seaboard Air Line Railroad cuts off a small strip of low woodland on the south side where the magnolias and sweet gums assume gigantic proportions, and through which runs a clear, cool and swift little stream, the watering place of the birds frequenting the locality. From its comparatively high situation and the abundance of food, Lively's woods furnishes a tempting halting place for the small birds passing southward in the fall. I was often in the woods at daybreak, and from that time till about 7 o'clock the migrants were very active, but after that hour and on throughout the day they could not be found.

What uncomfortable recollections still linger with me of the pains and penalties inflicted by that microscopic pest, the red bug (*Leptus*). Every conceivable spot in the woodland seemed infested by them and to entirely escape the plague was quite impossible though the severity of their sting was largely mitigated by the free use of sulphur sprinkled down the legs of my underclothes before leaving home.

The absence of a number before the species following indicates its incorporation in the former list and the addition of a number, that it is now recorded for the first time. I have continued the numbers in serial order from my first paper, thereby the more readily to present the number of species found in the county.

LIST OF SPECIES.

157. **Anas obscura.** BLACK DUCK.— Found three of these birds on sale at one of the stores on Nov. 8, 1904. They had been killed on Lake Jackson.

Sayornis phœbe. PHŒBE.— First seen in fall of 1904, Oct. 2.

Contopus virens. WOOD PEWEE.— First seen in fall of 1904, Aug. 28. From this date till Oct. 12 they were fairly common, but then disappeared. I have no evidence yet of their occurrence in the county during spring or early summer.

158. **Empidonax virescens.** GREEN-CRESTED FLYCATCHER.— Sept. 11, 1904, I saw the bird for the first time in the county, in a dark, damp part of Lively's woods. The explosive *peet* made known its presence. Last seen Oct. 9. It has been recorded as a nesting bird in South Florida but I am satisfied it does not even occur in Leon County except as a fall, and perhaps a spring, migrant.

Agelaius phœniceus. RED-WINGED BLACKBIRD.—I stated in my former article that the males of this species assume the female plumage in winter. In his notice of the article in 'Bird-Lore' for November-December, 1904, Dr. Dwight very gracefully suggests the error of this assertion and says: "He has evidently mistaken the young males for the females and not seen the black adults with the red shoulder-patches. This raises the question, Where have the adults betaken themselves? for they are certainly conspicuous enough not to escape notice." I freely acknowledge the mistake and hope to be able to answer the question some time in the future. The fact is, however, that the birds wintering with us have no shoulder-patch.

Sturnella magna argutula. SOUTHERN MEADOWLARK.—The Leon County meadowlarks must be referred to this subspecies. The difference in size between the birds found here and those taken in Maryland is very marked, the latter being, of course, the larger.

Astragalinus tristis. AMERICAN GOLDFINCH.—First seen in fall of 1904, Nov. 17. I was not afield the ten days prior to this date and they may have arrived a few days prior thereto.

Pœcetes gramineus. VESPER SPARROW.—First seen in fall of 1904, Oct. 13. They were rather common, and as I walked through McDougall's pasture in the dim light of early morning they arose from the short tufts of grass on all sides and scurried away to an apparently safe distance, incessantly uttering their faint monosyllabic *chip*.

Passerculus sandwichensis savanna. SAVANNA SPARROW.—For the first time I am now able to give some accurate information respecting this bird in the county. On the morning of Oct. 6, 1904, while walking through the pasture, I flushed several from the short tufts of grass but was unable to procure a specimen. I was more fortunate that evening, when, just before nightfall I took a chance shot at one, a female, that flushed some distance away and lit within range of my 'aux.' This date marks the first fall appearance of the bird in the county in 1904. At all events it is my first record, and I was in the field almost daily prior thereto. From this date till Oct. 28 they were fairly common, after which the numbers diminished perceptibly. As I met with the bird during January and February I conclude that it must be a winter resident in limited numbers.

Spizella pusilla. FIELD SPARROW.—It gives me great pleasure to here record the species as a nesting bird in the county, although Mr. Wayne has heretofore mentioned it as a nesting species in the adjoining county of Jefferson. On Dec. 10, 1904, I was shooting partridges (*Colinus*) in a large broomsedge field four miles from town. Everywhere were tangled masses of blackberry vines. The covey was nicely scattered, the birds rising singly. I had three on the ground and concluded to pick them up before flushing another. As I stooped to recover the first, my attention was suddenly arrested by a well preserved nest, which struck me instantly as that of a sparrow. I temporarily forgot the partridge in my zeal to identify the nest. Carefully removing it from its thorny surroundings, I safely

packed it away in a manila envelope I had with me. A darkey boy with me, who lived in the neighborhood, seeing my evident interest in the nest volunteered the statement that it was "a sparrow's nest." He had seen several, with eggs, in this same field during the "blackberry time." Questioning him closely, I found that his information was accurate in every detail to a highly satisfactory degree. He described the eggs minutely and stated the correct number, and if any doubt of the identity of the nest could have existed before it was dispelled by his statements.

Melospiza cinerea melodia. SONG SPARROW.— First record for the fall of 1904 was on Oct. 16. Several were feeding in the bullrushes of McDougall's swamp. They were singing sweetly on March 12, 1905.

Melospiza georgiana. SWAMP SPARROW.— First seen in the fall of 1904, Oct. 6. An exceedingly common bird in the bullrushes of McDougall's swamp.

Cyanospiza cyanea. INDIGO BUNTING.— During the latter part of August I found these birds very abundant in the sweet gums and oaks scattered here and there in McDougall's pasture. For some time I was unable to procure a specimen as they were extremely wary and remained, for the short time I had to be afield in the morning, in the topmost branches of the largest trees. Finally on Oct. 9, finding a number feeding in a small rice patch across the railroad, I procured specimens. Last seen Oct. 15.

Piranga erythromelas. SCARLET TANAGER.— Collected an adult female in Lively's woods Oct. 12, 1904. Have no further records.

Piranga rubra. SUMMER TANAGER.— The bulk of these birds left the county about the close of September. On Oct. 26 I collected a young female in Lively's woods — a very late date for this bird in the county.

159. **Hirundo erythrogastra.** BARN SWALLOW.— Found a number of these birds circling over the pasture in quest of their insect prey on the evening of Aug. 28. Their graceful flight lent a charm to the scene of the quiet pasture near the close of that perfect day.

Vireo olivaceus. RED-EYED VIREO.— A very common bird during the fall. The bulk arrived in 1904 the latter part of August and none were seen after Oct. 15. The bird nests in the county sparingly.

160. **Vireo solitarius.** BLUE-HEADED VIREO.— On Jan. 22, 1905, I saw this species in the county for the first time, a single bird in Lively's woods. Recorded another Jan. 29.

Vireo noveboracensis. WHITE-EYED VIREO.— I found these birds quite common in Lively's woods on October 7. One was singing sweetly from the upper branches of a small sweetgum. The bulk of these birds left the county about Oct. 15. The bird nests sparingly with us.

Mniotilta varia. BLACK-AND-WHITE WARBLER.— Found very abundant on Aug. 28 in Lively's woods. Evidently a band on their way south from their northern homes.

161. **Helinaia swainsonii.** SWAINSON WARBLER.— Each succeeding day of the fall of 1904 seemed destined to produce for me some record of a new species or valuable additional or cumulative evidence respecting species

heretofore known only casually. The height of my good fortune was reached when on the morning of Sept. 24, by the purest chance, I secured a single example of this species. The bird was taken in the coppice bordering Lively's woods, within a few inches of the spot where a week before I had collected my first Worm-eating Warbler of the county. This is the first and only record I have for the county. Diligent search for others after that date developed nothing.

162. **Helmitherus vermivorus.** WORM-EATING WARBLER.— I collected a single specimen in Lively's woods on Sept. 16. The bird was in the coppice bordering the woods and, as stated above, within a few inches of the spot where I collected the Swainson Warbler. Search failed to reward me again and I am of the opinion that this species is a rare migrant. Why I had never seen these two species before may be accounted for by my disposition to enjoy that 'morning nap' one hears so much of. My experiences during this fall impressed upon me the necessity of early morning work if one expects to know the birds of his locality.

163. **Helminthophila celata.** ORANGE-CROWNED WARBLER.— This species is doubtless a winter resident in the county. On Jan. 31, 1905, I collected one in Lively's woods; it was feeding with a number of Golden-crowned Kinglets. On March 12 I found them in the sweet gum trees of the pasture.

164. **Helminthophila peregrina.** TENNESSEE WARBLER.— So far as I am now aware this species is a fall migrant only. I found a migrating band on the morning of Oct. 26, 1904, feeding in the top branches of the slender oaks of Lively's woods. They were passing from tree to tree at a lively rate and I had some difficulty in keeping up with them. Collected three, male and female and one not examined, and another on the 28th.

Compsothlypis americana. PARULA WARBLER.— These birds were quite common from the middle of August to the middle of October. On the 16th of the latter month I found a number feeding on and near the ground in a cotton field. They left the county about Oct. 20.

Dendroica coronata. MYRTLE WARBLER.— Arrived Oct. 16 and was immediately common.

165. **Dendroica maculosa.** MAGNOLIA WARBLER. — I collected a single specimen on Oct. 11. The bird was in a vine-covered tree on the border of a ditch running through a field near town. Have no other record, though I was on the alert for them afterwards.

166. **Dendroica pensylvanica.** CHESTNUT-SIDED WARBLER.— Collected an immature male on September 23 in Lively's woods and found them rather common until Oct. 13, when they disappeared. It is a fall migrant.

167. **Dendroica castanea.** BAY-BREASTED WARBLER.— My first and only record was made on Oct. 13 when I collected a male in Lively's woods.

168. **Dendroica striata.** BLACK-POLL WARBLER.— I saw this species for the first time in the county on Oct. 11, when I collected a male in fall plumage. On the 28th I collected another in Lively's woods.

169. **Dendroica blackburniæ.** BLACKBURNIAN WARBLER.— I am glad to be able to add this lovely species to the list of the birds of the county. On the morning of Oct. 26 I heard the monosyllabic notes of a number of birds that were passing rapidly from tree to tree in Lively's woods. I began the chase and after some difficulty succeeded in collecting two of the birds. They were Tennessee Warblers. A third shot into the bunch brought down a very pretty male Blackburnian Warbler. My only record.

Dendroica dominica. YELLOW-THROATED WARBLER.— Additional notes made in the fall of 1904 establish the constant residence of this species in the county, though the bulk of them moves further south in winter.

170. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.— I added this species to the list of the birds of the county on Oct. 12, 1904, when I collected a fine adult male in Lively's woods and on the following day, another. Have no further records.

Dendroica palmarum. PALM WARBLER.— First of season seen Oct. 16. Found them common on March 12, 1905, feeding on the ground in the pasture in company with Yellow Palm and Myrtle Warblers. I think these were birds passing through from the south.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.— As the preceding and this bird are almost inseparable in our county, what is said of the former applies in most cases to the latter. Except in the dead of winter I always find them together.

Seiurus aurocapillus. OVENBIRD.— Can now record the bird as a fall migrant. First seen Aug. 17, 1904, in Lively's woods. There were several. On Oct. 2, I again saw them and followed this by a record for Oct. 9, when they were fairly common. No more were seen.

171. **Seiurus noveboracensis notabilis.** GRINNELL WATER THRUSH. — The birds collected during the fall of 1904 are pronounced by Dr. Bishop to be of this subspecies. Late in the evening of Sept. 13, while lingering on the edge of the marsh of McDougall's swamp, lost in the quiet splendor of a day rapidly waning, my attention was attracted by several small, dark colored birds that now and again passed from the edge of the marsh near me to the tall trees of an adjoining field and returned, as something seemed to disturb them. After considerable difficulty I succeeded in collecting one, a male. On the 24th I collected another in Lively's woods. Last seen Oct. 10. They were fairly common in the pasture and Lively's woods from the first record to the last.

Seiurus motacilla. LOUISIANA WATER THRUSH.— Collected one on August 29. They were never abundant and the last were seen on Sept. 18.

172. **Oporornis formosa.** KENTUCKY WARBLER.— Met with this bird for the first time in the county on Sept. 4, 1904, when I was walking along the public road leading down past McDougall's swamp. It was in the bushes on the side of the road. Later in the day, and five miles in another direction, I found two feeding in the tall weeds bordering a dense woodland. On the 11th another was seen, and on the 18th I collected a fine male on our plantation five miles from town. This was the last seen.

Wilsonia mitrata. HOODED WARBLER.— Of the pleasant recollections of the fall of 1904 none will remain so indelibly impressed upon my memory as those of the present species. The dry and lifeless skin of this bird excites more than ordinary appreciation of the beauties of natural things, so how much more intense must be that feeling when one can spend a morning in a beautiful virgin forest inhabited by several pairs of the living birds? Such was my privilege in that memorable season. In my former paper I was in great doubt as to the status of this bird with us. I said it was a migrant, never abundant. So the matter stood until August 17, 1904, when the spirit of fall possessed me and I betook myself to Lively's woods for recreation and relief from the endless vexations and annoyances of a professional life. No sooner had I climbed the wire fence than my presence disturbed a pair of these birds which was feeding on the ground near the edge of the woods. Their characteristic alarm notes resounded through the forest and I was deeply sensible of the position I occupied — that of an unwelcomed trespasser upon the domains of at least one of the legitimate proprietors of that bounty of Providence. The birds were in a high state of plumage, which stood out in well defined contrast to their dull-colored surroundings, for the Hooded Warbler is a bird of the earth, his ambition rarely taking him into the higher trees. Contented he is to spend his days among the fallen leaves or in the humbler growth of swamp or forest. There he shines and lives and is happy. There were six or eight pairs of them in this woodland and when the necessities of the times did not demand my presence elsewhere I could enjoy an hour or two in their midst, watching their every movement with my field glasses. They seemed always actively in search of food though they went at it very deliberately, in fact the bird has a very phlegmatic disposition, in the fall at any rate, and its movements are strangely different from those of any other warbler I know. On Oct. 16 they were still there. On the 26th an oppressive silence reigned throughout the woodland — they had gone.

Setophaga ruticilla. AMERICAN REDSTART.— Saw a female on August 19, 1904, in our yard. Sept. 23 they were common in Lively's woods. None seen after Oct. 14.

Anthus pensilvanicus. AMERICAN PIPIT.— In my former paper I said I had never seen this bird. There was no truth in the statement. I had seen it a hundred times but assumed it was the Vesper Sparrow and let the matter rest. Lake Lafayette is a large body of water, no where very deep, and there are seasons when it goes entirely dry, leaving a marsh stretching to the east and west almost as far as the eye can distinguish objects the size of a large oak. The whole body of land is covered with a growth of aquatic grass which when burned off makes way for a succulent grass that cattle are fond of. The place then becomes a pasture. I was so sure the bird ought to be there and so anxious to verify the statements of my friend who asserted the abundance of the species in the county, that on the evening of Nov. 26, 1904, I stole away from my office and drove to the lake, only to find overwhelming evidence of the accuracy of his assertion. The pasture

— for so it was then — was simply alive with titlarks. Flocks of hundreds were feeding over the ground and now and then, when disturbed by some roving hound or cur of the neighborhood, a veritable cloud of the birds filled the air. I afterwards found them feeding in high, newly plowed land and on several occasions met with them in some leafless tree in the middle of a field. The bird is a common winter resident.

Galeoscoptes carolinensis. CATBIRD.— Observations made during the fall and winter of 1904–5 lead me to the belief that if the bird is a winter resident at all it is quite rare. The history of those observations is as follows: First of season seen Oct. 3, several in Lively's woods and they were very noisy; a few days later I noticed a marked diminution in their numbers; by the 28th they were only occasionally seen or heard, and after the 10th of Nov. I did not see them again till Jan. 29, 1905, when I found one in a deep woodland near town, feeding on the berries of *Smilax*. None were seen again till March 10, when I found one in our yard. I left home shortly thereafter, so know nothing of the spring movement.

Certhia familiaris fusca. BROWN CREEPER.— I was passing through the pasture on the morning of Oct. 28, on my way home from Lively's woods, when passing under a gigantic live oak, I detected the high notes of this bird. A few moments' search revealed the little fellow climbing up the side of an upright limb near the top. On Jan. 29, 1905, I found another in a strip of woods a mile from town, and on Feb. 26 saw another searching the main trunk of a large pine. The bird is a winter resident in limited numbers.

Polioptila cærulea. BLUE-GRAY GNATCATCHER.— My records of this bird's occurrence throughout the winter of 1904–5 establish its constant residence in the county, though it is quite probable that those we have in winter are birds from the north while our summer residents move further south at that season.

173. **Hylocichla fuscescens.** WILSON THRUSH. *'Whieu'*—the weird notes of an unknown and unseen bird fell upon my ear during the first few mornings of my visits to Lively's woods. It was annoying in the extreme to leave the place in ignorance of the author, but I was unable to see the bird. Finally on Sept. 11, I was able to record the species. I saw one sitting upon the lower branch of a scrub oak with drooping wings and a querulous air. Until Oct. 9 they were quite common and whiled away a part of their seemingly aimless life chasing each other around the woods. They disappeared by the middle of the month.

Hylocichla guttata pallasii. HERMIT THRUSH.— This bird is associated with my childhood, perhaps more intimately than any other species, resident or migratory. In the days of that instrument of the devil, the sling shot, it was an easy mark. It sickens my soul now to recount the numbers that must be recorded against me somewhere. If a stricken conscience is any expiation of my crime I must be partially forgiven. But all that is necessary in a paper of this character has been recorded in my former article and I only wish to continue longer that I may boast of having

heard the song of the Hermit Thrush. Although I had spent my life in the winter home of this bird and its habits were as familiar to me as those of the Mockingbird, I had never heard it utter a sound other than a low, guttural, monosyllabic note expressive of alarm and kindred emotions. I was thus unprepared for the marvelous and elaborate song I heard on that 19th day of March, 1905. It marks an epoch in my ornithological career. Referring to my journal of that date I find the following: "I was out in Lively's woods early Sunday morning, March 19, 1905. Recent rains had dampened the woods so that a gloomy aspect pervaded the whole scene. I was standing down the ravine when off in the distance, apparently over in the pasture, I heard the faint notes of what I was sure must be the Wood Thrush; its song being familiar to me in consequence of my late temporary residence in the District of Columbia. I hastened in the direction of the sounds and as I drew near the edge of the woods descried a bird sitting in a small wild plum tree. It seemed annoyed at my intrusion. I stopped to look at it and finding only a Hermit Thrush started on in quest of the singer, when to my surprise the bird settled down upon its perch and commenced in low notes the sweetest and purest song I have ever heard. A lovelier melody never fell upon more grateful ears. The notes, liquescent and ventriloquial, beginning afar off, approaching slowly and finally bursting upon me, are impossible to be described." Mr. Brewster tells me that he has heard them singing in the swamps of Jackson County in early spring.

VARIATION IN THE HAIRY WOODPECKER (*DRYOBATES VILLOSUS* AND SUBSPECIES).

BY HUBERT O. JENKINS.

THIS study was originally intended to be limited to the western forms of the Hairy Woodpecker but later it seemed desirable to include data that had accumulated concerning all of the forms.

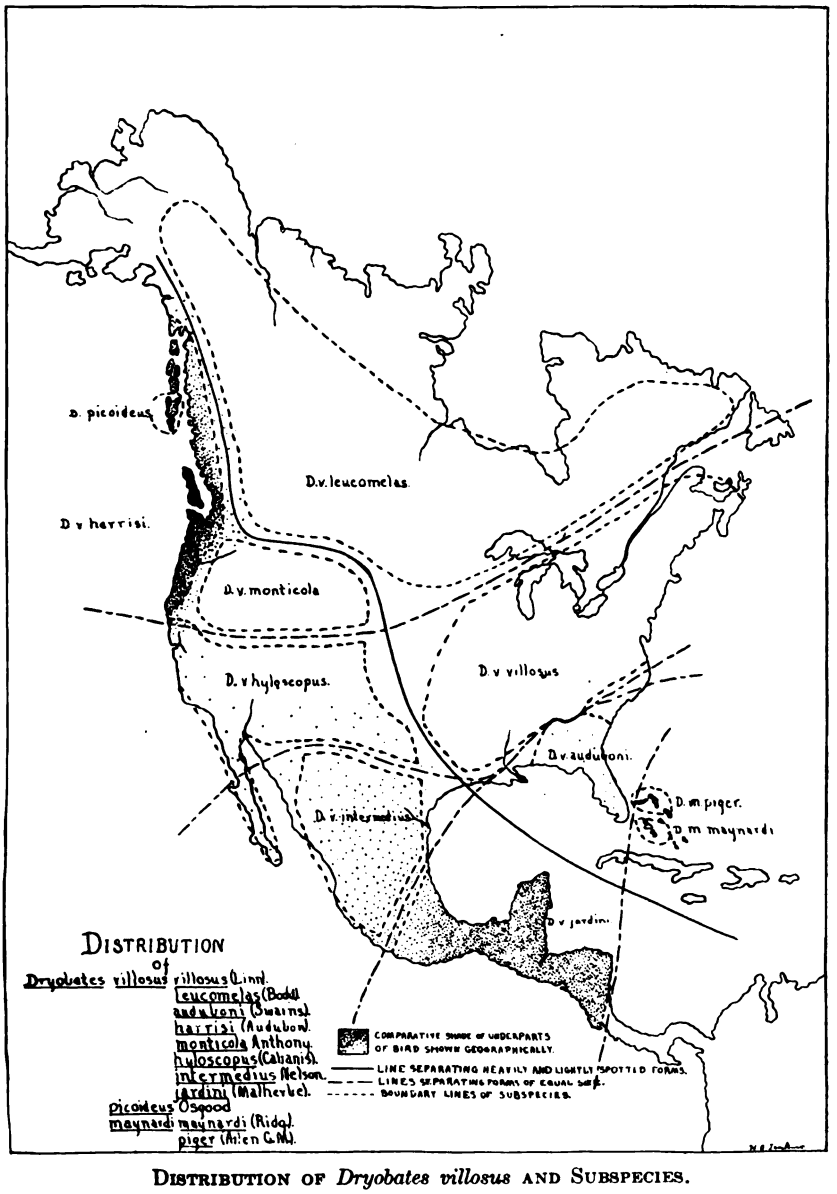
The number of adult specimens of each form examined was as follows: *D. v. harrisi*, 43; *D. v. hyloscopus*, 104; *D. v. monticola*, 7; *D. v. leucomelas*, 9; *D. v. villosus*, 12, and *D. v. auduboni*, 3. This includes a large number of intermediates and does not include some 30 immature birds.

I wish to thank Mr. Joseph Grinnell, Mr. W. K. Fisher, Prof.

J. O. Snyder, and Prof. O. P. Jenkins for numerous suggestions and assistance. For the privilege of examining specimens I am greatly indebted to the United States National Museum, the California Academy of Sciences, Mr. Joseph Grinnell, and Mr. W. Otto Emerson.

The Hairy Woodpecker is a form widely distributed over the continent of North America, ranging from Alaska and Hudson Bay to Central America and from the Atlantic to the Pacific Oceans. The bird varies somewhat in localities distant from each other so that different groups have been given different subspecific names, but from their close similarity and habits all are regarded by some authors as belonging to the same species. Its nearest relative is evidently the Downy Woodpecker, which is much smaller, although the only difference in plumage of the Downy Woodpecker is the barring of the outer tail feathers, which are pure white in the Hairy Woodpecker. In the West, although inhabiting the same general localities, the two species are not often found immediately together. In the East, however, this separation does not hold. The food question no doubt is as vital a question with them as with any other animals and on this account the birds have come to occupy the particular regions best supplying their wants. In the West the Downy Woodpecker frequents the willows and creek beds, orchards and valley districts, where it is constantly on the lookout for grubs and larvæ, digging them out of bark or spearing them with its long pointed tongue, while the Hairy Woodpecker, a stronger, hardier bird, occupies the mountainous districts and seems especially to love the pine forests. Many specimens indicate this by the telltale pitch left on their breasts. In the depth of winter it is found away up in the Boreal Zone of the Sierras, making the chips fly in search of its favorite food, undisturbed by the rigorous cold. However, it is not an abundant bird and is very shy of man. When you approach, it sidles around on the other side of the limb and watches you with one eye and if it suspects injury in the least, is gone in a moment, swinging high over the tree tops uttering its shrill, quick *peek, peek.*

As mentioned before, the Hairy Woodpecker differs more or less in different regions, and has consequently been split up into several subspecies or varieties by systematists, who recognized the differ-



DISTRIBUTION OF *Dryobates villosus* AND SUBSPECIES.

ences as soon as material began to accumulate. Linnæus[1] in his 'Systema Naturæ' of 1766 first formally named the species. He gave it the specific name of *villosus* and placed it in the genus *Picus*. This genus was later restricted to certain European Woodpeckers and the genus *Dryobates* was proposed to include the American form, so that our Hairy Woodpecker has become *Dryobates villosus*. In 1783 Boddaert[2] discovered that the birds in Canada which resembled *villosus* in markings were considerably larger, and since this difference was constant he separated the Canadian form under the name *Picus leucomelas*. Some fifty years later Swainson,[3] in examining a number of specimens of the Hairy Woodpecker from different parts of North America, came to the conclusion that those inhabiting the southern United States should have a separate name and he called them *Picus auduboni*. He had but one specimen, from Georgia, and took the risk that others from that locality would conform to his type, and he proved not to have been mistaken in his conclusions. Audubon[4] discovered a new species on the Columbia River in 1839, Malherbe[5] another in southern Mexico in 1845, and Cabanis[6] in 1863 separated the southern California bird from Audubon's *harrisi* and called it *Dryobates hyloscopus*. Audubon's bird was a very dark-breasted form, distinct from anything yet known, while Cabanis's bird was a light-breasted form, more like the eastern *villosus*, but yet with certain characters (to be mentioned later) separating it from *villosus*. In rather recent years, as more specimens were acquired, the Cabanis form was found to include more than one race. Anthony[7] described a larger bird from the Rocky Mountains and Nelson[8] found differences in specimens from the arid tablelands of northern Mexico.

When we get together material from all over North America we find that all the Hairy Woodpeckers belong to one species, and

[1] Linn., S. N., ed. 12, I, 1766, p. 175.
[2] Boddaert, Tabl. Pl. Enl., 1783, p. 21.
[3] Swains. in Sw. & Rich., Fauna Bor. Am., II, 1831, p. 306.
[4] Aud., Orn. Biog., V, 1839, p. 191.
[5] Malherbe, Rev. Zool., 1845, p. 374.
[6] Cab. & Heine, Mus. Hein., IV, ii, 1863, p. 69.
[7] Anthony, Auk, XV, Jan., 1898, p. 54; *ibid.*, XIII, Jan., 1896, p. 32.
[8] Nelson, Auk, XVII, 1900, p. 259.

COMPARISON OF THE WING MARKINGS OF THE EASTERN AND WESTERN FORMS OF *Dryobates villosus*

I Eastern Pairing. II. Western Pairing
III Eastern Pairing. IV. Western Pairing
p Secondary & primaries

Boddaert's *leucomelas* and Malherbe's *jardini* are subspecies connected by links still existing for the whole length of North America.

In *Dryobates villosus leucomelas* the under parts are entirely pure white. The upper parts are black except for a white stripe down the back. The crown and sides of the head are black. There is a white stripe over and behind the eye, and another running from the nasal tufts around under the eye to spread on the side of the neck. In the male there is a scarlet nuchal band which is wanting in the female. The young of both sexes has the whole crown partly red or yellowish. The outer feathers of the tail are white and the inner black. The wings are marked profusely with white spots.

Analyzing the wing we find that the primaries have four to seven large round spots on either web which are placed equally distant apart. The proximal four spots are always present and each of the three distal ones, although generally present in all primaries except the first, is less persistent than its respective proximal neighbor. Thus the seventh or most distal spot is often absent, especially in the shorter primaries.

The secondaries have five spots on the outer web, which are round and as large as the width of the web permits. The inner web has six spots, which are quite large, and the two proximal ones are confluent.

The greater coverts have four spots, as shown in the figure, and the lesser coverts are crossed by two bars. Rarely, spot No. 1 is omitted from the greater covert and in the lesser covert there is a slight variation tending to shorten the long axis of the proximal bar.

The range of this form is northern North America from the interior of Alaska (Ft. Reliance) to Labrador and south to about the northern border of the United States. It does not include the Pacific Coast region.

Dryobates villosus villosus is much the same as *D. v. leucomelas* in coloration and markings but is a decidedly smaller bird. The primaries and secondaries have on the average the same spotting pattern, but the three-spotted greater covert predominates over the four-spotted form, and many of the median coverts have, instead of two bars, two rounded or irregularly shaped spots which are rarely coalesced to form a central streak.

Its distribution is the United States east of the Rocky Mountains and north of about 35° N. Lat.

Dryobates villosus audubonì of the southern United States is a small dark bird. The wing spotting is very little different from that of the other two forms just mentioned. The spots on the primaries and secondaries average very slightly less in number. Of course they are smaller in size than in *leucomelas*, but compared with the size of the feather they are relatively the same. The greater coverts have lost spots 1 and 2 but 3 and 4 are always present. The median coverts have a single spot which is variable in size and shape.

Compared with *leucomelas*, *audubonì* is extremely different. Compared with *villosus* the difference is not so great. Between the extremes of these subspecies there are intermediates in size. So that if we proceed from north to south we find a gradual and certain decrease in size. One writer[1] records a distinct line between *audubonì* and *villosus* in the southern Alleganies. He says that he found *villosus* occupying the Balsam regions above 4000 feet, and *audubonì* in the lowlands up to 4000 feet, and that all birds are easily distinguished. Very likely intergradation does not take place at that point. However, it certainly does at other localities.

Proceeding from east to west we find the birds gradually losing the white wing spots, and when we reach the Pacific Coast the closed wing shows but little white.

In the southwestern United States we have *Dryobates villosus hyloscopus*. It is more nearly the size of *D. v. villosus*. The under parts of some examples of *hyloscopus*, on close examination, show a slight tinge of brownish red, but the distinguishing character is found in the spotting of the wing. The outer web of the primary has but three spots. These correspond with the three proximal spots of the eastern form, but are much reduced in size. The inner web has retained the four proximal spots, which are also reduced in size. The secondary has lost all but the most proximal spot from the outer web. The inner web has the same number of spots as that of the eastern bird, but the spots are smaller and the two proximal ones are not confluent. The greater coverts have only spot No. 4 left. The median coverts are either entirely black or have a white streak down the center. This form is

[1] Brewster, Auk, III, p. 104.

found in California, Lower California, Arizona, and New Mexico. Some of the specimens at hand from New Mexico are intermediate in spotting between the western and eastern forms but are nearer the western.

Dryobates villosus harrisi has the wing spotting like *hyloscopus* but the light parts are a deep smoky brown. The extreme of this form is found at Vancouver Island and along the coast region of British Columbia and Washington. There, all birds are uniform smoky and the wings have a uniform scarcity of spots. In northern California and southern Oregon, *harrisi* and *hyloscopus* intergrade. In the Siskiyou Mountains are found birds that vary from pure white to very dark. At Sitka, Alaska, *harrisi* has become very much lighter and some specimens show a great increase in wing spotting. Three specimens from Ducks, B. C. (a region between the Rocky and Cascade Mountains), have characters of both *leucomelas* and *harrisi*. The under parts are pure white while the wings are scarcely spotted. A fourth specimen from the same locality is profusely spotted and hence nearer *leucomelas*.

Dryobates villosus monticola, found in the Rocky Mountains from Colorado to Montana, has a scarcity of wing spots like the other western forms but is larger than *hyloscopus* and the under parts are said to be pure white without any reddish tinge as with some *hyloscopus*. (In the series at hand there are few specimens of this form, but I believe that when more material has accumulated, the range of *D. v. monticola* will be found to extend no farther south than Colorado or farther north than southern Montana and will include Utah, northern Nevada, eastern Oregon, southeastern Washington and southern Idaho. The evidence for the southern boundary is the fact that *D. v. hyloscopus* reaches its maximum size in the northern Sierra Nevadas while specimens from Arizona and New Mexico are comparatively quite small. The northern boundary is indicated by intermediates between *D. v. leucomelas* and *D. v. monticola* taken in Montana. And if any form is to be found in the arid interior of Washington and Oregon it would not likely be *D. v. harrisi*, since that form is not found outside of the Humid Coast Belt in Alaska.)

Dryobates villosus jardini is smaller than *hyloscopus*, the under parts are very dark, and it inhabits the mountainous portions of Central America and Southern Mexico.

Dryobates villosus intermedius, ranging in the territory between *hyloscopus* and *jardini*, is smaller than *hyloscopus*, larger than *jardini*, and is also intermediate in smokiness of the underparts.

Besides the eight subspecies mentioned, there are two island forms that are not known to intergrade with the continental species.

Dryobates picoideus[1] inhabits the Queen Charlotte islands off British Columbia. It has the white stripe on the back barred or spotted, and is entirely distinct from any other form.

Dryobates maynardi includes two subspecies, *D. m. maynardi*[2] of the southern and *D. m. piger*[3] of the northern Bahama Islands. In 'The Auk,' XXII, April, 1905, pp. 124–126, Mr. Allen has shown that *piger* and *maynardi* intergrade, but it seems that neither one intergrades with the mainland *auduboni*. (The name *Dryobates maynardi piger* (Allen) is more nearly correct than *Dryobates villosus piger* Allen, if we would fulfil the requirements of "the test of intergradation for subspecies." However, having recognized the subspecies, it is to be admitted that the combination is really of minor importance.)

Viewing the Hairy Woodpeckers as a whole we see that there are certain variations in the structure of the birds corresponding to certain regions. Why these variations exist we cannot say with certainty. It is probably through natural selection and the survival of those best fitted to escape from enemies or to obtain food in the particular region that they inhabit, but why a profusely spotted bird can get along better in certain localities than in others, and a large bird can get along better in the north than in the south is hard to say.

Taking up the lines of variation separately we have first, the Spotting: —

It is plain that the spots on the inner webs and proximal ends of the feathers are more persistent. So we might reason that the western bird is more highly developed, as follows: that the spots so common among the Woodpeckers were originally developed for some good service, as for directive markings, etc.; but to make the bird less conspicuous while climbing up dark colored tree trunks, the white on the outside of the closed wing was greatly reduced.

[1] Osgood, N. Am. Fauna No. 21, 1901, p. 44.
[2] Ridgway, Manual N. Am. Bds., p. 282 (1887; see Cory, Auk, 1886, p. 375).
[3] Allen, Auk, XXII, 1905, p. 124.

Thus not only would the bird more nearly resemble the background, but the attractive feature of large white spots on black feathers would be done away with. To reduce the white on the closed wing it was only necessary to eliminate the spots from the exposed portions of the feathers, namely the outer webs and the ends of the flight feathers and coverts, for the inner web of each flight feather is covered by the outer web of the preceding feather and only the distal ends of the coverts are exposed. This is just what we have in the Western Hairy Woodpecker wing. The spots on the outer webs of the secondaries are reduced to a single one at the base of each feather, which is always hidden by the greater coverts. The spots on the exposed parts of the greater coverts are reduced in number and size, or more commonly are entirely absent, and the spots on the median coverts are either absent or reduced to a mere streak. Several spots on the outer webs of the primaries still persist but they are fewer in number and are much reduced in size and are consequently very inconspicuous.

When the bird is in flight it does not need this protective coloration but probably does need the spots for the same purposes for which they were originally developed, and we find that nearly all of the spots on the parts of the wing that were unexposed when it was closed, namely those on the inner webs of the flight feathers, are still retained. The inner web of the secondary has lost only the outermost spot, and the inner web of the primary the three outer spots, but these were the smallest spots in the eastern bird and of the least importance. When the bird flies, the wing is thrown up as often as down, and the striking contrast of white and black is about, though not entirely, as effective as before to all observers except those that may be directly overhead.

Thus we have the least possible contrasting shades on the bird at rest combined with the greatest possible contrasts on the bird in flight, and given that the contrast in flight is of use to the bird, then this combination is an advantage and was developed as such.

Could this theory be absolutely proven we would still have to explain why all of the Hairy Woodpeckers have not developed in like manner. If we draw a geographical line between light and heavily spotted forms this line would in part coincide with the geographical line between the Arid West and Humid East. But I

greatly doubt if aridity and humidity has anything to do with the wing spotting. We might say that the more highly developed form has had more enemies and more competition, but such a statement needs yet to be proven.

As for the darkening of some colors of birds, it has been said that it is an advantage in any humid region where there is a great deal of shade. So we find the range of the darkest woodpecker (*D. v. harrisi*) exactly coinciding with that region of North America which has the greatest total shade, namely the Pacific Humid Coast Belt. *D. v. jardini* is said to inhabit an extremely humid region in southern Mexico, but scarcity of data from that region prevents forming definite conclusions in regard to it.

If we draw geographical lines separating forms of equal size, these lines will nearly coincide with parallels of latitude. Very likely either the more rigorous climate of the north has eliminated all birds except the larger and hardier, or else there is a direct physical effect on the individual causing it to grow larger.

It is a strange fact that the Downy Woodpeckers vary exactly as the Hairy in size, wing spotting and coloration, and for every continental form of the Hairy Woodpecker north of Mexico there is a corresponding form of the Downy. In Mexico the latter is not found.

AVERAGES OF MEASUREMENTS (IN MILLIMETERS) OF THE FORMS OF *Dryobates villosus*, TAKEN ONLY FROM SPECIMENS EXAMINED BY THE AUTHOR.

Form	No. of Specimens	Sex	Tarsus	Toe	Claw	Tail	Wing	Bill
D. v. leucomelas	5	♂	24	18.5	10.5	82	129	33
" " "	4	♀	25	18	10.5	79	128	33
D. v. villosus	6	♂	22.5	18	10.5	79.5	125	33
" " "	6	♀	21	17	10	76	121	29
D. v. auduboni	2	♂	21.5	17.5	10	64.5	113	29.5
" " "	1	♀	20.5	16	10	68	115	29
D. v. harrisi	23	♂	23.5	18	10.5	79	128	32
" " "	20	♀	23	18	10	80	124	31.5
D. v. hyloscopus[1]	43	♂	23	17.5	10	78	126.5	33.5
" " "	14	♀	22	17	10	77	123.5	30
D. v. hyloscopus[2]	30	♂	22	16.5	10	75	124	32
" " "	17	♀	21.5	16	9.5	75	122	28
D. v. monticola	5	♂	23.5	17.5	10.5	83.5	132.5	34.5
" " "	2	♀	21.5	16	10	85	130	—

[1] California north of 35° N. Lat.

[2] Except California north of 35° N. Lat.

NOTES ON THE BIRDS OF CAPE BRETON ISLAND.[1]

BY CHARLES W. TOWNSEND, M. D.

THE following notes on the birds of Cape Breton were made during a visit to that island between the 17th of August and the 5th of September, 1905. This region has already been visited in summer and its birds noted by Dr. J. Dwight, Jr.,[2] F. H. Allen,[3] and the late Frank Bolles.[4] Dr. Dwight and Mr. Allen confined their observations to the Bras d'Or region.

My own trip was by water to the island and through the Bras d'Or Lakes, and on foot from South Gut near Baddeck, "down north" as far as Neil's Harbor; also by boat from Ingonish to Sydney, and up the Myra River, with a drive through the eastern part of the island.

Ninety-eight different species of birds were noted; a number of which at this late date were of course migrants. The following twenty-one species may be added to the lists above referred to.

Cepphus grylle. BLACK GUILLEMOT.— Common along the shore from Englishtown to Neil's Harbor.

Larus marinus. GREAT BLACK-BACKED GULL.— A not uncommon migrant.

Larus delawarensis. RING-BILLED GULL.—One on the beach at Ingonish.

Sterna paradisæa. ARCTIC TERN.— Common everywhere along the shore. At South Bay, Ingonish, out of eight Terns, six appeared to be of this species, two *S. hirundo*. Dr. Dwight[5] corrected his first note of this species as all his specimens proved to be *S. hirundo*.

Puffinus gravis. GREATER SHEARWATER. **Puffinus fuliginosus**.—SOOTY SHEARWATER.—Four of the latter and one of the former were seen at sea south of the island, the numbers of the two species being in inverse order to their usual proportion.

[1] Read before the Nuttall Ornithological Club, December 4, 1905.
[2] Auk, Vol. IV, 1887, p. 13.
[3] Auk, Vol. VIII, 1891, p. 164, and Vol. XII, 1895, p. 89.
[4] From Blomidon to Smoky. Boston, 1894.
[5] Auk, Vol. VI, 1889, p. 186.

Oceanodroma leucorrhoa. LEACH'S PETREL. **Oceanites oceanicus.** WILSON'S PETREL.— Petrels, apparently of both species, were seen at a distance off the Nova Scotia coast south of Cape Breton.

Sula bassana. GANNET.— An adult flew directly over the steamer half way between Ingonish and Sydney on September 1. Several were seen south of Cape Breton on August 17.

Phalaropus lobatus. NORTHERN PHALAROPE.— Several were seen at sea south of the island on August 17.

Actodromas fuscicollis. WHITE-RUMPED SANDPIPER.— Several were seen at Ingonish.

Calidris arenaria. SANDERLING.— Two were seen at Ingonish.

Numenius hudsonicus. HUDSONIAN CURLEW.— One seen at Ingonish.

Squatarola squatarola. BLACK-BELLIED PLOVER.— A flock of 14 were seen at Englishtown on August 21.

Accipiter velox. SHARP-SHINNED HAWK. **Accipiter cooperi.** COOPER'S HAWK. **Buteo lineatus.** RED-SHOULDERED HAWK. **B. platypterus.** BROAD-WINGED HAWK.— One of each of these species of hawks was seen.

Pinicola enucleator leucura. PINE GROSBEAK.— Two adults and two young were watched within a few yards near Neil's Harbor on August 27. The female was feeding the young.

Passerella iliaca. FOX SPARROW.— I saw one individual of this species at Neil's Harbor on August 26.

Passer domesticus. ENGLISH SPARROW.— W. P. Coues[1] reports that this species "made its first appearance in Cape Breton coincidently with the completion of the Cape Breton Railroad, during the month of November last [1889]". I found it abundant at towns along the railroad, as at Hawkesburg, St. Peters, and Sydney. It was also abundant at Baddeck, Englishtown, and at Sandy MacDonald's at the mouth of French River. Fortunately it did not seem to have extended north of that point, and may Smoky long block its way!

There were eighteen species recorded by Dwight, Bolles or Allen which I did not see, namely: *Clangula clangula americana, Harelda hyemalis, Oidemia deglandi* (the entire absence of Scoters along

[1] Auk, Vol. VII, 1890, p. 212.

the coast even during the latter part of my visit in September seemed to me strange), ?*Rallus virginianus*, *Philohela minor*, *Coccyzus* sp.?, *Picoides arcticus*, *Sphyrapicus varius*, *Antrostomus vociferus*, *Trochilus colubris*, *Empidonax minimus*, *Poœcetes gramineus*, *Melospiza georgiana*, *Zamelodia ludoviciana*, *Dendroica castanea*, *Seiurus noveboracensis*, *Wilsonia pusilla*, *Hylocichla guttata pallasii*.

I also failed to find *Compsothlypis americana usneæ* and *Melospiza lincolni*, both recorded at Cape Breton by Mr. Wm. Brewster[1] in his 'Notes on the Birds observed during a Summer Cruise in the Gulf of St. Lawrence.'

The following notes are added on several species previously reported for the Island.

Chætura pelagica. CHIMNEY SWIFT.— The houses outside of the large towns at Cape Breton are generally very poorly supplied with chimneys. In fact, brick chimneys are rarely seen, but small stovepipes are used. Chimney Swifts, which are common, have therefore to adapt themselves, and I was told that it is usual for them to nest in barns and sheds. At French River, close to the sea, I observed on August 22 a Swift flying in and out of a window in a small hay barn. Inside on the end wall opposite the window and close under the apex of the rafters the nest was fixed and it contained the half-grown young. The nest was a rather bulky affair, made of spruce twigs, and the glue-like substance with which the twigs were stuck together was smeared like varnish on the boards above and below the nest. Below the nest was a large pile of droppings, as if the place had been used for several years. This accumulation was added to from time to time by the young, who carefully disposed themselves so as to avoid soiling the nest. When the adult bird flew in with food, chirping loudly, there was a loud reply from the young. The old bird generally alighted on the wall below the nest, clinging in a vertical position, and later fluttered up to the edge of the nest where it fed the young. The shrill twittering of the young was almost deafening in the small hay loft. The next morning early I found both parents at the nest, one on the wall, the other sitting on the nest, spreading one wing at times, and brooding the young.

[1] Proc. Boston Soc. Nat. Hist., Vol. XXII, 1883, p. 364.

Corvus brachyrhynchos. AMERICAN CROW.— In 1881 Mr. Brewster[1] was impressed with the familiarity of the Crow with man in these regions, owing to the fact that, as no corn is planted, there is no cause for dispute. Along the roads, in farm yards and even in remote places at Cape Breton one may walk within a short distance of crows. At Grand Narrows I was interested in watching a crow on a fence within 20 yards of me pick a chicken bone. He held the bone with his foot during the process but flew off with it in his bill. It is common for crows to alight on buildings, and I once saw four together on the roof of a small outhouse at Ingonish. In eastern Massachusetts such familiarity would be very surprising.

Corvus corax principalis. NORTHERN RAVEN.— Along the northeast coast of Cape Breton, between Englishtown and Neil's Harbor, I found Ravens fairly common. Four or five were seen nearly every day. In searching for some good field mark to distinguish this species from the Crow, I found that the shape of the tail was diagnostic. The tail of the Crow when spread, or partly spread is evenly and but very slightly rounded, for the length of the outer feathers is nearly the same as that of the middle ones. In the Raven, however, the middle feathers are noticeably longer than the outer, and the gradation between the two or four middle feathers and those outside is especially marked. I found that the tail of a *Corvus*, once well seen, always showed definitely whether the bird was *corax principalis* or *brachyrhynchos*, and the *croak* or *caw*, if afterwards heard, always confirmed the diagnosis. The harsh croak of the Raven is of course always diagnostic. I have noted it as *errroak*, *crrraa* and *crrruk*, and once near the top of Smoky I was startled with a coarse cry that sounded like *helup*. As is well known, the larger size of the Raven is of but little help in distinguishing the two species, unless they are near together for direct comparison. Neither is the greater tendency of the Raven to sail or soar conclusive for this purpose, for Crows at times disport themselves in similar fashion.

The road to Ingonish winds along near the summit of Mount Smoky, and gives an unobstructed view into a huge ravine which

[1] *Loc. cit.*

nearly divides the great rocky mass into two parts, the sea lying close at hand on the east. This is a favorite resort for Ravens, and one can look down on the great birds showing glossy and purplish in the sunlight as they sail from one side of the ravine to the other. A couple of these birds sailed over this ravine, one close above the other, and as I watched them with my glasses, the lower bird turned completely on its back and both birds grappled for an instant in mid air. Later at Ingonish I saw a similar performance, but in this case the upper bird dropped its feet first, and the lower at once turned over to grapple with it.

At French River one morning I watched four Ravens performing some interesting evolutions about the cliffs. Each in turn or together would fly up almost vertically against the wind, and then swooping or darting down turned at times a complete somersault. That evening four Ravens, possibly the same birds, flew by hoarsely croaking and sailed off to the woods beyond the river.

Loxia curvirostra minor. AMERICAN CROSSBILL. **Loxia leucoptera.** WHITE-WINGED CROSSBILL.—Both species of Crossbills were abundant everywhere in the island, owing probably to the abundance of food, for the black and the white spruces, particularly the latter, and the balsam firs, were loaded with cones. The natives said it was an unusually abundant crop.

The American Crossbill sang but rarely and then with but little enthusiasm, but the white-winged species was everywhere in full song. One of these I shot and found the testes as large as peas. This and the singing certainly suggested breeding. I saw no fledglings and had no time to look for nests. The great variation in the time of breeding of Crossbills is well known, but it is certainly strange to think of these birds breeding in late August and early September.[1]

Ora W. Knight[2] in speaking of the American Crossbills seen at Jackman, Maine, from August 16–23, 1895, remarks: "What is very odd is the fact that I observed a number of the birds flying about in pairs. These were probably still nesting. Some of the Crossbills probably nest much later than is generally supposed."

[1] *Note.*— Mr. Brewster tells me that he once found evidence of Crossbills breeding at Lake Umbagog in September.

[2] Auk, Vol. XII, 1895, p. 391.

The song was frequently ringing in my ears, and it is a song that is well worth recording, especially as most writers give such an imperfect idea of it. Wilson, Nuttall, Minot, Stearns and Coues, Langille, and Hoffmann do not mention it. Audubon says: "Its song is at times mellow and agreeable." Baird, Brewer, and Ridgway say of captive birds that "their songs were irregular and varied, but sweet and musical." Brewster[1] in his 'Notes on the Birds observed during a Summer Cruise in the Gulf of St. Lawrence' says: "The old males occasionally uttered a feeble, trilling song very like that of the Snowbird." Chapman says: "Their song is low, soft, and sweet, much like that of the American Goldfinch." G. M. Allen in his 'Birds of New Hampshire' says: "The song which I have sometimes heard in July is a series of trills alternately high and low."

The last is the best description of the song as I heard it at Cape Breton. The trills resembled so closely those of the Canary-bird, that several persons who heard it spoke of the bird as the "Wild Canary." Far from being low and feeble, the song was delivered with great vigor and abandon, the birds often flying about in large circles over the woods. Occasionally the song was delivered from the top of an evergreen, but usually its vehemence was so great that the bird was lifted up into the air, where it flew about slowly, pouring out meanwhile a great volume of music. This lasted for minutes at a time, and ceased only when the exhausted bird came to a perch. The song would often be at once taken up by another bird, and occasionally several were singing in the air at a time.

The volume of the sound was constantly swelling and dwindling, at times a low sweet warbling, then a rough rattling, more like a mowing-machine, then a loud all-pervading *sweet, sweet, sweet,* recalling exactly a Canary-bird. Anon the song would die down to a low warbling, and again burst out into a loud sweet trilling *whee, whee, whee.*

When singing from a perch, which was always the tip-top of a spruce or fir, the Crossbill frequently twitched its tail, and erected the feathers of its crown. One fairly good singer appeared to be rather immature, being mostly gray with but a faint tinge of red

[1] *Loc. cit.*

in the breast. This full nuptial song is certainly very different from the song occasionally heard at other seasons, and would hardly be recognized by one who had heard the latter only.[1]

The American Crossbill, on the other hand, rarely sang. Occasionally one might hear the call-notes so rapidly repeated that they resembled a trilling song. One bird emitted this song as it flew, following it up by several high, quickly repeated squeeky notes.

Parus hudsonicus. HUDSONIAN CHICKADEE.— It is as easy to distinguish this bird by its notes from the familiar Black-capped Chickadee, as by its plumage. There are, however, very few descriptions in the books of these characteristic notes, and I can find no account of a song. Both Chickadees have a variety of faint notes that are very much alike, but there is one characteristic in most of the notes of the Hudsonian which at once distinguishes it from the Black-cap, and that is the *z* quality, delivered in a lower pitch. In a word, the Hudsonian uses *z* while the Black-cap uses *s* or *d*. The former says *pst zee-zee* or less often *pst zee-zee-zee*, while the latter repeats more frequently, and rattles off, *psik a dee-dee-dee-dee-dee*, and his notes are higher pitched.

Several times in different places I was treated to a pleasant little warble from the Hudsonian Chickadee, which appeared to my companion and myself to easily merit the name of song. It was a low, bubbling, warbling song, which I vainly attempted to describe in my notes. It began with a *pstt* or *tsee*, followed by a sweet but short warble. This song, if song it be, is quite different from the irregular rolling notes that the Black-cap occasionally emits, which cannot be considered a song. In one case I noted that the song was emitted by an adult. I heard the song several times from one bird at Englishtown, several times from another at Indian Brook, once at Skir Dhu, and once at North Ingonish. It is evident therefore that it was not the idiosyncracy of one bird. While it would seem strange that the Hudsonian Chickadee should not have a song, it is stranger still that those who are familiar with the bird at all seasons should not have heard it, if it exists. As far as I know the only allusion to a song in this species is by Mr. Horace W. Wright

[1] Since this was written, my attention was called to a very similar description of this glorious song by Olive Thorne Miller in her 'With the Birds in Maine' (Boston, 1904), pp. 10 to 12.

in the Auk, Vol. XXII, 1905, p. 87, in which he refers to a Hudsonian Chickadee seen at Ipswich, Mass., on November 12, 1904, as follows: "[he] was very finely seen while he gave a sweet warbling song." Of another bird, seen on November 25, he says: "The Belmont bird was also well seen and gave a few notes of the warbling song."

STRAY NOTES FROM ALASKA.

BY A. W. ANTHONY.

AS EVEN fragmentary notes on the avifauna of northwestern Alaska are by no means common I have ventured to offer the few disjointed records which I noted during the winter of 1904–1905 on the Seward Peninsula. These records are from a region somewhat closely adjoining those so well covered by Messrs. Nelson and Grinnell, and I would hesitate were it not for the fact that the country explored by myself is almost entirely open tundra, differing from the St. Michaels region or that of Mr. Grinnell's camp on Kotzebue Sound. The Seward Peninsula is more or less timbered along the streams and mountains of its eastern part but the spruce growth ceases abruptly between Long. 163° and 164°, west of which nothing larger than arctic willows are to be found, save for one or two small groves of stunted cottonwoods, which will be mentioned more in detail further on.

After the fall migration the Redpolls lingered along the willow thickets until I had hopes that they would winter with us, for I could not see any possibility of any other winter residents except the Ptarmigan. A march of over a hundred miles in early October failed to bring to light any other species but by October 15 the last Redpoll had departed for the timbered regions along the Yukon, leaving the tundras and wind-swept hills to the Rock and Willow Ptarmigan, large flocks of which had appeared by October 1, in more or less advanced winter dress.

On October 26 I saw the first Snowy Owl; though the species is said to nest all over the peninsula, I did not meet with any until then, when I found them common near the base of the Kigulik Mountains, about 20 miles from the coast. Very little snow had fallen up to this time and the wind-swept hummocks offered ideal watch towers where at nearly any hour of the day two or three owls could be seen, certain favored elevations being scarcely ever without a tenant on the watch for a luckless mouse or lemming. As the snow became deeper mice were harder to catch, and owls correspondingly scarce, so that by December 1 they were nearly or quite all gone.

On November 20 I heard a Chickadee on the upper Cripple River, and a month later another lisped his cheery notes to me from a stunted bunch of willows on Penny River as I journeyed toward Nome. This was, with the exception of a few Willow Ptarmigan, the last bird I saw for two months.

Early in February I arranged with an Eskimo to accompany me on a sledge journey to Cape Prince of Wales, thence north into the Arctic as far as caprice might carry us, returning to Nome only when travel with dogs was no longer practicable—late in May as it subsequently proved.

Off Grantley Harbor, at the edge of the shore ice, a large gull was seen February 20. It was following an open lead along the edge of the ice pack, so far away that its identity could not be ascertained.

As the natives at Cape Prince of Wales reported no game to be found to the north along the coast it was considered advisable to follow up some of the rivers tributary to Grantly Harbor or Port Clarence further east.

On March 1, at Port Clarence, a flock of a dozen Snowflakes marked an epoch in the trip. They were on the wind-swept sand-spit, the only spot of bare earth I had so far seen on the trip, and, to keep from being carried away by the gale then blowing, were lying almost flat on the sand and behind frozen hummocks of snow.

On March 3 a Richardson's Owl was caught on the Agapuk River. It had taken up its quarters in an abandoned igloo, and when driven into the glare of the outer world was confused, and after a short flight returned to the igloo and submitted without protest to capture. From an inspection of several deserted igloos

in the interior of the peninsula I concluded this species was a regular winter resident and made general use of these shelters. During the month of March two or three Richardson's Owls were seen, all in the thick willow growth along the Kruzitrin River.

A few *Parus* were found at long intervals in the willows; their presence being usually announced by their call, and it was not often that one could be seen near enough for identification. I think that all I saw were *P. cinctus alascensis.*

Extending up from Grantly Harbor, toward the northeast, is an extensive basin but very slightly elevated above the sea. The tides are noticeable 75 miles by the river from the head of Grantly Harbor, and with a south wind the waters are distinctly salt even thus far from the coast. Running back from the several rivers which drain into this basin are numberless sloughs and bayous, forming a network of water ways, a veritable swamp in summer, well nigh impassable, but furnishing ideal nesting grounds for water birds, while the thickets of willow and alder growing over a large part of the dryer ground furnished better cover for land birds than I met with in any part of the peninsula. Flanking this region on the south is the Kigulik Mountains, their ragged peaks rising abruptly to elevations ranging from 3000 to 4700 feet and extending about 60 miles east and west. At the base of the range, on the north side, are found several hot springs within an area of a few acres, and surrounding them a growth of cottonwoods of perhaps a mile in extent. In this region I camped several times and found more bird life than in any part of the region covered. As the Eskimos assured me that about the warm springs the water fowl are first seen in the spring migration, I returned to this point to watch the arrivals as late as I safely could and return across the mountains before the ice broke up in May. Most of my time was spent along the northern base of the Kigulik Mountains, and the valleys of the Krugamapa and Kruzitrin Rivers.

Two or three Redpolls were seen and heard singing March 7 in the willows along the Kruzitrin, and on the same day two Hawk Owls were recorded. These arrivals marked the first of the spring movement, but it was several weeks before any real migration could be said to have commenced. Redpolls became gradually more common, coming in flocks by April 15. It was not until April 12

that the first Snowflakes made their appearance at the base of the Kiguliks, and then but a pair were seen, twittering a suggestion of their spring song; they became abundant but little later than the Redpolls. On March 27 a *Dryobates*, of the size of *pubescens*, was seen among some dwarf willows at the base of the Kiguliks and was the only representative of the order that I met with at any time. The same day I saw a Golden Eagle, and from inquiry of the Eskimos learned that the species is resident but not common.

On several occasions between March 15 and May 1 Gyrfalcons were seen along the bayous and sloughs, where they were doubtless hunting Willow Ptarmigan. They were by no means wild but maintained a discreet distance. The natives state that along the Tuxsuk River, connecting Salt Lake with Grantly Harbor, "white" Gyrfalcons nest quite commonly, feeding on the water fowl that nest about Salt Lake.

On May 3 a Rough-legged Hawk was noted at the hot springs, and on the 23d, while en route to Nome, I found a nest that had been despoiled of its three fresh eggs by a prospector the day before. The nest was a bulky structure of sticks on a ledge, but quite accessible. In the cottonwoods about the hot springs were many hawk nests but up to the date of my leaving the only species seen other than the above was a single Marsh Hawk on May 8.

The Eskimos assured me that the first water fowl to arrive would be the geese which, regardless of weather, would be seen within a day or two of May 1. It was therefore with considerable interest that I watched the open water below the hot springs. May was ushered in with a thermometer 25° below zero, and as much snow and ice as at any time during the winter. Some bare tundra could be seen where an April thaw had promised an early spring, but otherwise winter reigned supreme. It was clear that since the only open water was at my station, early water fowl must sooner or later report in my region. The bad weather continued, however, until the 6th when the north wind abated somewhat and in the A. M. three geese, of the size of Hutchins's came in from the west and alighted after circling the pond. Another was reported the same day as passing on to the north. No others were seen until warmer weather set in, on the 10th, when migrants fairly swarmed. At 11 A. M. two Whistling Swans arrived from the west, and after

some minutes spent in circling the pond disappeared in the north. A little later large flocks of Little Brown Cranes began to arrive from the east and passed on toward Cape Prince of Wales. All the rest of that day they were passing by and the air was filled with their bugle-like notes. With them came flocks of geese, numbering each from four to twenty-five. Many of the geese came from the west, suggesting the possibility of their having come from Siberia.

Most of the flight seemed to be *Branta canadensis minima*, but a few *Anser albifrons gambeli* were noted as well. Each flock of geese, on arriving, made direct for the open water but after being disturbed they retired to the open spots on the tundra or lit on some of the many frozen lakes. This date also brought us the first gulls; several, the size of the California Gull, lit on the ice or hovered over the open water but were so wild that they could not be identified with certainty. Wilson's Snipe also was noted for the first time on the 10th and rapidly became common.

On May 11 a Robin was heard singing. At the pond I found a flock of ducks, consisting of Pintails, Green-winged Teal, and Scaups. Three Least Sandpipers were probing the mud for their breakfast. Later in the day flocks of *Tringa* and *Larus* arrived from the east. In a small cottonwood near the hot spring a nest of the Northern Shrike was found with seven fresh eggs. The nest was large and bulky, composed of sticks and twigs outwardly, somewhat loosely put together; inside of fine dry grass, lined with a large quantity of the pure white feathers of the ptarmigan, which gave to the structure a most artistic effect.

On the 12th Robins were plenty, and Tree Sparrows had also arrived in numbers. The flight of water birds had somewhat abated though but few ducks had arrived. The geese had paired and were looking into the merits of the nesting sites offered in the open spots on the tundra. After I reached the coast I learned that this region was visited by heavy and prolonged rains that so swelled the streams that a large part of the nesting water birds were driven from their nests; the geese gathered in flocks and were said to have made little or no attempt to raise a brood.

On the southern slopes of the Kigulik Mountains I met with the first Fox Sparrows and Golden Plovers on May 16, and the following day noted the first Titlarks and Red-backed Sandpipers. The

18th brought the first Lapland Longspurs and Golden-crowned Sparrows, and the 21st the first Parasitic Jaeger. On the 22d a number of Golden Plovers arrived in pairs, their mellow calls sounding from every side as they sought the bare spots on the tundra or chased each other over the snow drifts. One Wandering Tattler also arrived on this date.

One Bristle-thighed Curlew was seen on the head of the Nome River on the 23d. Here also I met with quite a flight of Hawk Owls migrating northward. At no time during the day were they absent from the landscape, and often five or six were seen at one time.

On May 24 I took a nest and set of four eggs of the Hoary Redpoll, from a leafless arctic willow that reached but two feet above the snow. The eggs were so far advanced in incubation that they could not be saved. No attempt has been made to tabulate the migration further than to note the arrivals in a general way. As a rule I think the land birds became abundant a day or two after the first arrival was noted. There was, however, a straggling band that brought up the end of the procession long after the movement had to all appearances ceased, as was attested by my finding a number of Lapland Longspurs on each of several days spent with the Eskimos hunting walrus in the ice pack fifty miles or more south of the peninsula.

ON A NEW FORM OF *OCEANODROMA* INHABITING SAN BENITO ISLAND, OFF THE COAST OF LOWER CALIFORNIA.

BY HANS GRAF VON BERLEPSCH.

Oceanodroma monorhis chapmani *Berl.*

O. O. monorhis dictæ valde affinis sed alis multo, cauda tarsisque paulo brevioribus, rostro longiore, necnon corpore supra nigrescentiore, minus griseo lavato, distinguenda.

Al. 149–147 caud. 77–76 culm. 28¾–28¼ tars. 22½–22 mm.

Habitat in insula San Benito dicta, maris pacifici Californiæ inferiori proxima.

Typus in Mus. H. v. B. (♂ San Benito Isld.).

In the year 1899 I received through Mr. H. W. Marsden of Clifton, Bristol, a number of rare North American birds, which he had to sell in commission for Mr. C. K. Worthen of Warsaw, Ill., whose firm name is to be found printed on the labels. From this consignment I picked out several specimens of Petrels belonging to the genus *Oceanodroma*, collected in the San Benito and Guadelupe Islands off the coast of Lower California. They bear labels in a handwriting I do not know. These *Oceanodroma* are evidently referable to three different species, viz.:

1. *O. macrodactyla* W. E. Bryant from Guadelupe Island, a large species with partly white upper tail coverts.

2. *O. melania* (Bp.) from San Benito Island, a large species of nearly uniform blackish coloration, but with whitish brown apical borders to the upper wing coverts. Erroneously labelled as *O. socorroensis*.

3. A species evidently closely allied to *O. monorhis* (Swinh.), but erroneously labelled as "*O. melania.*" From the latter the two specimens from San Benito Island now in my collection differ in their much smaller size and in having the front, face and chin suffused with grayish slate color instead of being uniform with the rest of the body, also in the back being paler and of a more brownish black. Otherwise the coloration in these two birds is the same as in *O. melania*.

They are labelled as follows: *Oceanodroma melania*, San Benito Island, Lower California, July 14, 1897. "♂" and "♀" respectively, numbers 1770, 1763.

When at London last year by the kindness of the Hon. Walter Rothschild, I had an opportunity to compare my small so-called *O. melania* with specimens of *O. monorhis* Swinh. from Amuria in the Tring Museum. I found them to be closely allied to *O. monorhis*, but differing from it in their much shorter wings, also somewhat shorter tail and bill, and in their darker and less grayish upper parts.

O. monorhis had not yet been mentioned as occurring in San Benito Island, or elsewhere on the coast of California. The new form as described above is evidently the American representative of that Asiatic species.

While participating in the fourth International Congress at London, I had also the good fortune to show my birds to Mr. Frank M. Chapman of New York. Mr. Chapman having satisfied himself of the distinctness of this new form, I have great pleasure in naming it after a distinguished authority on North American birds.

THE STATUS OF THE "SAN FRANCISCO TITMOUSE."

BY JOSEPH GRINNELL.

TOWARDS the latter part of 1903 a new form of the Plain Titmouse was described[1] under the name *Bæolophus inornatus restrictus*. It was based upon specimens from a suspiciously restricted locality, namely the vicinity of Oakland, California. Without any apparent hitch the A. O. U. Committee on Nomenclature published[2] its acceptance of the alleged subspecies just nine months

[1] Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, p. 109.
[2] Auk, XXI, July, 1904, p. 418.

later, a much quicker decision than is usually accorded western novelties! The matter has since rested, apparently for the reason that no one has had the inclination or opportunity for verifying the validity of the race.

In 1845, Gambel described[1] his *Parus inornatus* from "Upper California," and two years later announced[2] that Monterey was the place of discovery.

The neighborhood of Monterey was thus established as the type locality of *Bæolophus inornatus inornatus*. Monterey is in the southern portion of what I have elsewhere called the Santa Cruz "District" or Faunal Area. Many humid coast races find in Monterey County the southern limit of their distribution; to the northward their range spreads interiorly to include the "San Francisco Bay Region," excepting the salt marshes. Such races are *Toxostoma redivivum redivivum*, *Thryomanes bewicki spilurus*, and *Chamæa fasciata intermedia*. Excluding the Song Sparrows and Yellow-throats, which are differentiated into local races by the fresh water and salt marsh sets of influences, I had so far failed to detect differences between any birds of the coast and those of the narrow district lying between the east shore of San Francisco Bay and the Mt. Hamilton Range (termed Berkeley Hills at the north). And I could not see why the Plain Titmouse should present a conspicuous exception.

In September, 1904, I examined the extensive series of *Bæolophus* in the Academy of Sciences collection at San Francisco, and among these, several skins (but not all) from Oakland presented the "dark" coloration, which is given as the sole character of *restrictus*. I also examined other species from the neighborbood of Oakland and Alameda with the significant result that a number of birds of that limited locality seem prone to dark or leaden shades of coloration. This has been remarked[3] upon by McGregor who gives several cases, and I can add to his list Green-backed Goldfinch, Willow Goldfinch, and now the Plain Titmouse!

The upshot of the matter is that I feel convinced that the name *restrictus* was based on specimens of the ordinary *inornatus* in

[1] Proc. Ac. Nat. Sc. Phila., Aug., 1845, p. 265.
[2] Proc. Ac. Nat. Sc. Phila., Feb., 1847, p. 154.
[3] Condor, II, Jan. 1900, p. 18.

some manner adventitiously colored. The prevailing westerly winds, charged with the gases, soot and dust from the manufacturing bay-shore districts of San Francisco, sweep across the bay and up over the cities of Alameda and Oakland, with their added contributions, to the hills beyond. It seems to me probable that feathers may be soiled by this dirty atmosphere like the shrubbery and buildings in the same locality.

Mr. W. O. Emerson has kindly loaned me his series of 12 skins of *inornatus* from Haywards. This place is only 14 miles southeast of Oakland, the type locality of *restrictus*, but not one of them shows the character of that alleged form. I cannot distinguish these from 15 specimens collected by myself at Palo Alto, 17 miles further south across the bay, nor from 4 skins submitted to me by Mr. H. O. Jenkins who obtained them the past summer in Monterey County. For the want of skins from the immediate vicinity of Monterey we may safely consider the latter, from the headwaters of Big Creek in the coast district south of Monterey, as typical of *Bæolophus inornatus inornatus*. Among all these specimens, when seasonal changes are carefully accounted for, there appear to be no locality differences.

In view of the above considerations, ecologic and otherwise, I would urge that the so-called "San Francisco Titmouse" be no longer recognized as a phylogenetic race.

Pasadena, Cal.

THE FLORIDA GALLINULE NESTING ON LONG ISLAND, NEW YORK.

BY WILLIAM C. BRAISLIN, M. D.

THE previously accepted status of the Florida Gallinule (*Gallinula galeata*) has been that of a rare migrant in the vicinity of New York City. It may, however, be properly classed as a locally common summer resident. It cannot be claimed that its breeding has not heretofore been suspected. The Messrs. W. F. and John Hendrickson, whose ornithological collecting has brought to light a number of valuable bird records, notices of which have appeared in 'The Auk', have had an unverified record of a Gallinule breeding in the Long Island City marshes of several years standing. This record will be referred to presently.

The generous assistance of the Messrs. Hendrickson, first in directing my attention to the unpromising region situated near the center of Long Island City, and likewise their direct coöperation and assistance in my investigation, have made it possible to establish the fact of the Gallinule's nesting here. More than two years ago Mr. William Dutcher courteously directed the attention of the writer to this region as one which might be profitably investigated; he, in turn, having received his information from the Messrs. Hendrickson.

A letter received from Mr. W. F. Hendrickson at that time, in reply to my questions, contains information which led to my exploration of the region. The following is a quotation from it: "In regard to the Florida Gallinule nesting more or less regularly in Long Island City, I beg to say that I believe that at least one pair has nested in the ponds along Judson Avenue and the Long Island Railroad tracks, near the Queens County Court House, for seven or eight years past. I believe also that the Coot has bred there. My brother and I have taken specimens of both Coot and Gallinule, and some years ago my brother found a nest, which contained seven or eight eggs, we believed to be that of the Gallinule, but, for some reason which I have forgotten, the eggs were not taken. My recollection is that I wanted to either see the birds at close range or to shoot one of them as a positive means

of identification, and that we let it go until too late; and since then we have never searched for the nests, although we heard the birds during the spring and summer months. Our attention was first attracted to them by the noise they made. They have a harsh, strident call, and sometimes it could be heard all evening and well into the night. Investigating to ascertain the cause of it, we saw that it was a large, dark-colored bird, which I took to be the Gallinule. I asked my brother about his recollection of the facts, and he said that the principal thing he remembers is this: the birds he saw had a bright red lump on the front of the head. This would indicate that it was the Gallinule. It is certain that the birds seen were either Gallinules or Coots and, as previously stated, I think both have bred there. The ponds in which they breed are deep, with muddy bottom and overgrown with cattails. To seek the nests is dirty exhausting work and I have passed the period of enthusiasm that has led me many times to put on old clothes and literally swim through such places. Therefore the information I give may not be such as would establish a positive record but, as Mr. Dutcher can tell you, my experience is such that you may consider the information as reliable as it could be without the dead birds to prove it. The birds were in the ponds this season (1903), as I heard them on many occasions. The locality frequented by them is thickly populated and you would no doubt be astonished to think birds would breed there. However, we have taken nests of both Sora and Virginia Rails and of the Least Bittern in the same ponds."

In company with the Messrs. Hendrickson as our hosts and Mr. John N. Drake the near by salt marshes were visited in the summer of 1904, and these repaid our investigation in yielding several nests, among them one of the Virginia Rail.

The ponds where the nest was taken were likewise pointed out to us, but not explored at this time. These ponds were originally part of the salt meadows but were laid out into streets and city blocks, years ago, and the streets themselves filled in, so that they stand at a considerably higher level than the marsh land. The ponds thus formed by the intersecting streets, and having no outlets, have become partly filled with rain water so that they are now stagnant muddy pools of nearly, or quite, fresh water. The

bottoms of the ponds are composed of soft, dark, foul-smelling mud which, if not too deep under water, supports a luxurious growth of tall cattail flags. The small leaved, bright green duckweed also finds a congenial habitat here. The bottoms are irregular and not without deep holes, as we afterwards found.

The summer of 1905 proved a propitious one for investigation as it was dryer and the ponds were not so full of water, and were visited several times.

On June 21, 1905, several birds were seen, and, as we supposed, were both Gallinules and Coots, and a flat nest among the flags was located. This was empty. Mr. John Hendrickson also killed for me one of the birds that was swimming in the open water beyond the reeds and this proved to be a Gallinule.

In this specimen, a female, the largest ovule was only the size of a pea and it was believed that some days would have elapsed before she would have laid. Both Gallinules and Coots have been seen later in the season than this in previous years by the Messrs. Hendrickson, so that as yet we were in the dark as to whether the Gallinule or the Coot nested in the ponds.

The loud call of the birds could be heard in the reeds, and as nearly as we could judge each of the several ponds contained a pair of birds. Mr. Erikson, Assistant Curator of birds at the Brooklyn Institute Museum, who visited the ponds on one occasion with me, stated that the call note was apparently exactly similar to that of the Old World Moorhen (*Gallinula chloropus*). It slightly also suggests to the writer the harsh note of the domestic Guinea fowl.

On July 15, 1905, the ponds were visited in company with Mr. C. G. Abbott, and on examining the nest seen on June 21, it was still untenanted, but a few feet away there had been a fresh nest built. This had apparently been disturbed and disarranged, and just outside it we found the remains of two eggs. Their form was preserved but in one a large hole had been made, and in the other a smaller hole in the side, and much of the contents had been removed. This had probably been the work of some early-morning crow visitors.

The site of the nest was surrounded by water waist-deep, in a clump of reeds. The eggs were preserved. They are the eggs of the Gallinule (*Gallinula galeata*). No birds were observed on this

occasion in the pond referred to, but a number of birds, both old and young, were seen in adjacent ponds. Mr. Abbott explored one particularly fruitful area, and as he has kindly placed his notes at my disposal for use in this paper I make from them the following quotations:

"The spot was a triangle of reeds bounded by two branching railway tracks and an embankment built to carry a road over the marsh. It was not 100 yards in extent in any direction. By getting up on the embankment I could get a view over the whole little pond. I had hardly looked before out into an open space stalked a mother Gallinule with her brood about her, well-grown downy youngsters, black as ink. They were pecking about like a flock of chickens. Hardly had they disappeared among the reeds again than I spied another Gallinule walking leisurely about in the open, her red head [frontal plate] especially conspicuous. On entering the swamp, which was waist deep, a sharp, penetrating note like the squeak of a toy or child's doll was heard. The sound possessed no ventriloquial qualities and seemed just as close as it was, for, as I peered through the reeds I saw the bird (an adult) skulking leisurely away from me. Thereafter I had opportunities to observe several birds — at least four adults, I think, in this one small pit. I was much surprised at their tameness, for they would allow a remarkably close approach and then only moved slowly away in an insulted sort of manner, stopping very daintily and constantly flirting their tails. Among the reeds their exceedingly broad feet enable the birds to walk upon the duckweed, but in crossing an open space they swam. I saw young birds, however, which being light (those I saw thus were about the size of a Spotted Sandpiper), walk upon the duckweed even over a broad open space. In swimming the bird nods the head at each stroke, and the feet then being hidden, it looks almost exactly like an English Moorhen. The white streaks on the body, however, are quite conspicuous, and give her a (to me) strange appearance. One bird I saw swimming had the wings raised and arched over the back, something after the manner of a male swan. I soon learned that the birds possessed quite a vocabulary, though the commonest notes were the loud *keck* described above (uttered when the intruder approached too near) and a lower, clucking sound.

"I found several nests, all empty, and it was evident that we were too late for eggs. The nests were all like the very first one mentioned and composed of compactly matted reeds placed at the base of a little clump of cattails (usually slightly isolated). The beds of the nests were very close to the surface of the water and the structures were not unusually large, as is often the case with rails and gallinules. All the nests I found were close to the edge of open water, not in thick reed beds. It was in precisely such a place that I saw, from a railway train in Jersey City, my only previous Gallinule May 28, 1904."

The observation of these birds at this place which, unless our attention had been directed here, would have seemed more unlikely than the average empty city lot to yield bird "finds".

The evidence of the nest and eggs of the Gallinule collected in the ponds, the continued presence of the birds throughout the spring and summer, and the ultimate appearance of young birds, are conclusive as to the breeding of the Gallinules.

As to the Coots (*Fulica americana*) no positive evidence is as yet established beyond the fact of its presence at a late date, June 28, 1904, at the ponds, as the observation of the Messrs. Hendrickson unquestionably shows. The following quotation from Mr. W. F. Hendrickson's letter establishes probability at least that the Coots as well as the Gallinules nest in the ponds.

"On the morning of the 28th June (1904) while passing the ponds south of my house I saw two Coots. The train was going out of the yard very slowly, when my attention was attracted by a movement at the edge of a small triangular pond, overgrown with cattails. I looked, and saw a Coot standing in shallow water feeding within ten feet of the track, and it never moved as the train passed. A short distance further on I saw another swimming across some open water. The white bills stood out very clearly, and I also saw the white feathers of the wings. My identification is as positive as it could be without having the birds in hand. These birds are undoubtedly nesting there and if you care to come up again to make a search we shall give you whatever aid we can.

"In talking to my brother about the white bills being so noticeable, he said one of the birds seen by him had a very red bill. It

is, therefore, probable that both the Coot and the Gallinule breed in those ponds."

The above, it will be observed, was written by Mr. Hendrickson before our investigations of last summer (1905), and though we were then only able to establish the fact of the breeding of the Gallinules, our search was conducted too superficially and intermittently to detract from the probability that the Coot may also nest here. In fact I am very much inclined to agree with Mr. Hendrickson that the Coot also nests here, at least occasionally if not regularly; since his identification, which I regard as positive, as to its presence there on June 28, in the previous year (1904) at so late a date, must be regarded as significant.

It is hoped that this important question, which can by no means be regarded as settled definitely in respect of the Coot, may be determined during the coming season (1906), since extensive filling in of these flats has already commenced and unless the matter is absolutely decided now, it must hereafter be regarded by ornithologists as an opportunity neglected.

UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.

I.

I TAKE unusual pleasure in presenting the following letters, written by two such prominent characters, who have the love and respect of the ornithological world, and whose life and writings are ever cherished. Another point of interest is the fact that Audubon in his fifty-eighth year formed, through correspondence, the acquaintance of young Baird, then only fifteen years of age, and, appreciating the young man's ardent love for natural history, his energy and marked ability as a field collector and close observer, wrote him letters of encouragement which doubtless had a stimulating influence. These letters, representing certain periods be-

tween 1840 and 1846, show a growing friendship between their authors.

Baird made his first visit to Audubon in New York in February, 1842, and in November of the same year Audubon wrote an urgent letter to his young friend, inviting him to accompany him on his proposed trip to the Missouri River, and offering him most liberal inducements. During these years Baird was furnishing Audubon with much valuable material in both birds and quadrupeds. Some of the birds which he collected in and about Carlisle, Pa., and which are referred to in these early letters, are to-day in the Baird brothers collection in the Smithsonian Institution. This collection numbered over 3000 skins and formed the basis of the present National Museum collection.

The two species of *Tyranula*, the subject of their first ornithological paper, are probably mentioned in these letters for the first time. A letter from Mr. Witmer Stone, relative to other correspondence on the subject of these flycatchers, to which he has had access, is so complete and to the point, that I quote in full.

"The little Flycatchers mentioned in the following letters, whose identity caused so much speculation on the part of the young ornithologists of Carlisle, are now placed in the genus *Empidonax*, one of the most perplexing groups of North American birds.

"There occur in Pennsylvania four distinct species. (1) *E. virescens*, first clearly distinguished by Vieillot, and almost simultaneously by Wilson, but subsequently for many years known by the name *acadicus* Gmelin, of very doubtful application. (2) *E. trailli*, first described by Audubon (our eastern race is *E. trailli alnorum*). (3) *E. flaviventris*, the bird described by Baird in the letter to Audubon, dated June 4, 1840, and later published under the above name. (4) *E. minimus*, the bird described briefly in the letter to Audubon dated June 21, 1841, and compared with *acadicus*, and finally published along with the other in the first volume of the 'Proceedings' of the Academy of Natural Sciences of Philadelphia, by the brothers Baird; this paper being Spencer Baird's first contribution to science.

"Swainson and Richardson had published a species of this same group under the name *pusilla*, with which the Bairds vainly endeavored to identify one or the other of their new species without

success. In fact, *pusilla* of Swainson and Richardson remained a sort of 'bug-a-boo' until Mr. Brewster finally disposed of it as unrecognizable. (See Auk, Vol. XII, p. 157.)

"The letters of Wm. Baird to his brother throw some interesting side lights on the history of these new flycatchers, and for the privilege of making extracts from them I am indebted to Miss Lucy H. Baird. William was then in Washington, but evidently kept fully in touch with bird matters at Carlisle. Under date of Aug. 24, 1841, he writes, in comment on Audubon's letter of July 29: 'I am not at all surprised that Audubon thinks the Yellow-bellied Flycatcher to be *pusilla*.' He, it will be noted, had identified '*minimus*' as a female or young of '*pusilla*' and '*flaviventris*' as the adult male. On Jan. 7, 1842, William Baird writes: 'Mr. Audubon must be a much cleverer fellow than I supposed him to be. His present of the biography was very kind. You know I told you in the fall that the little Yellow-bellied Flycatcher answered pretty well to Richardson's plate of *Tyrannula pusilla*, but Townsend [1] said he had seen thousands of the bird on the Columbia and pronounced our little bird not to be the *pusilla*, however, I think Audubon right.'

"Spencer Baird still seemed to think one or both were new, and advocated publishing them, but William wrote on Feb. 1, 1842, strongly discouraging this idea. By June 4, 1843, however, he had come round to his brother's view and says: 'I think we had better publish as soon as possible in the Journal of the Philadelphia Academy.... At all events the Rocky Mountain bird and our Yellow-belly are different, one must be new and those fellows in Philadelphia (who, by the way, know little or nothing) would sooner believe the bird got out there to be *pusilla* than ours. We might for the matter of that, describe either and they would not know whether we were right or wrong.' On the strength of this the paper was written and submitted to the Philadelphia Academy, and on July 16, 1843, we have the following from Wm. Baird: 'I received a letter from Townsend. He says Cassin wrote to him about the birds we described and sent on. I suppose he wanted Townsend's opinion. Townsend wrote to him that he had no

[1] John K. Townsend, who visited the Columbia River in 1834, was now located in Washington. The bird he saw was probably *traillii*.

doubt they were new. For the mere opinion of those Philadelphians that a bird is a new species, I would not give one straw, but no doubt they may think Townsend knows so much about these birds that his word would be enough. He certainly knows more than any of them.'

"The last chapter in the history, I published in 'The Osprey, Vol. IV, p. 173. It is a letter from Cassin to Spencer Baird, July 5, 1843: 'Dear Baird: Dished! Last evening being the 4th of July the Academy of Natural Sciences of Philadelphia did not muster a quorum, the honorable members being as it would appear patriotic as well as scientific, were probably helping to celebrate the anniversary of the nation's birthday in a manner seeming to them right and proper, which was pretty enough in them, and to which I have not the slightest objection excepting that I had not the pleasure of reading to them your paper.' It was read the next week, however, and ordered printed July 25th. Audubon revised his opinion of the new species, accepted them gracefully and figured them in the appendix of Vol. VII of his 1840–44 edition of 'Birds of America.' Let us hope that Wm. Baird, in the same spirit, revised his opinion of the Philadelphia ornithologists."

I take this occasion to express my hearty thanks to Miss M. R. Audubon for the generous gift of the Baird letters, and to Miss Lucy H. Baird, who kindly furnished me with copies of Audubon's correspondence to her father, five of the letters being a direct reply to those sent by Baird. I am also indebted to Prof. O. B. Super of Dickinson College, Carlisle, Pa., for information regarding certain names and localities mentioned in the letters, and to Dr. Charles W. Richmond and Mr. Witmer Stone for assistance rendered. In Dr. Coues's Bibliography of 1878 (in 'Birds of the Colorado Valley'), in quoting the 1840–44 edition of 'Birds of America,' he writes the following, so beautifully and truthfully expressed: "If a trace of sentiment be permissible in bibliography, I should say that the completion of this splendid series of plates with the name *bairdii* was significant; the glorious Audubonian sun had set indeed, but in the dedicating of the species to 'his young friend Spencer F. Baird' the scepter was handed to one who was to wield it with a force that no other ornithologist of America has ever exercised."

These Letters are copied "verbatim, literatim, et punctuatim."

BAIRD TO AUDUBON.

Carlisle, Cumberland Co., Pa., June 4, 1840.

Dear Sir

I herewith send you the description of a species of *Tyrannula*, an account of which I have been able to find, neither in your Ornithological Biography and Synopsis, nor in Nuttall's Ornithology. I have obtained three specimens, all in low swampy thickets. Two of them I stuffed, the third (obtained last Saturday) [May 30, 1840] I have in spirits and would gladly send it to you, had I the opportunity. Their habits were very similar to those of the Little Tyrant Flycatcher. (*Muscicapa Pusilla.*) Male.

Bill large, depressed, decidedly convex in its lateral outlines, and very broad. Third quill longest. Bill dusky above, yellow beneath. Feet dark brown. Upper parts clear greenish olive. Cheeks and sides of neck of a slightly lighter tint. General color of lower parts gamboge yellow, throat slightly darker, across the breast tinged with yellowish green. Quills and tail brown. First row of smaller wing coverts tipped with yellowish white, as also are the secondary coverts. Secondary quills narrowly tipped and margined with the same. Loral space and eyelids yellowish. Outer edge of tail feathers, like the Back. Length to end of tail 5 1/2, to end of wings $3,\frac{11\,1/2}{12}$, of claws $4\frac{4\,1/2}{12}$, wing from flexure 2 6/12; tail 2; distance between end of closed wing and end of tail 1 3/12: Bill along ridge 5/12, lower mandible 7/12: Tarsus $\frac{7\,1/2}{12}$: Hind toe and claw $\frac{4\,2/3}{12}$, middle toe and claw $\frac{5\,1/2}{12}$: First quill 4/12 less than third; $\frac{3\,1/4}{12}$ less than second. Middle tail feathers $\frac{1\,1/2}{12}$ less than the outer. It differs very decidedly from the Little Tyrant Flycatcher. The color of the upper parts is of a much brighter and purer color. The white and ash of the throat, neck, and sides, is replaced by the yellow and greenish yellow. The color of the rest of the lower parts is much brighter, being a decided gamboge. The bill is much larger, and broader, being very decidedly convex in its lateral outlines. The tail also is of a darker brown.

I send you the measurement of another Flycatcher which I shot last Saturday. It was flying about from one low bush to another, in a field by the creek. I heard no note. Length to end of tail

5 3/4, of wings 4 7/12, of claws $\frac{3\,1/2}{12}$: extent 9 1/2: Tail 2 $\frac{4\,1/2}{12}$, wing from flexure 3 $\frac{2\,1/2}{12}$: end of closed wing from end of tail 1 $\frac{4\,1/2}{12}$: Second quill longest $\frac{4\,1/2}{12}$ longer than the first. Middle tail feathers $\frac{1\,1/2}{12}$ shorter than outer. Bill along the ridge 5/12, edge of lower mandible $\frac{7\,1/2}{12}$ tarsus $\frac{6\,1/2}{12}$; Hind toe and claw 4/12; middle toe and claw $\frac{5\,1/2}{12}$.

This bird was a female, and resembled the Wood Pewee very much having the same large and broad bill, and pretty much the same claws. It may be a very small individual of that species.

You see Sir that I have taken (after much hesitation) the liberty of writing to you. I am but a boy, and very inexperienced, as you no doubt will observe from my description of the Flycatcher. My brother[1] last year commenced the study of our Birds, and after some months I joined him. He has gone elsewhere to settle and I am left alone. I have been much assisted however by Dr. A. Foster[2] of this place in various ways, and should the above Flycatcher happen not to have been described, it would gratify me very much to have it honored with his name. This letter is already too long, yet perhaps you will pardon me for adding a few remarks about some of the Birds found about Carlisle. And first, has not the adult male Cape May warbler a black crown? I obtained three specimens this spring, two of which agree with your description, while the third resembles the other two perfectly, except in having a perfectly black crown, as stated by Nuttal.

The Little Tyrant Flycatchers (*M. Pusilla*) were very abundant here this spring. I found them principally on low bushes and trees, in wet places, and I have seen more than a dozen in a day.

The Rough winged swallow is very abundant about here. In fact I may say to the exclusion of the Common Bank Swallow, as I have in vain this spring endeavored to get a specimen of the latter. They breed in the banks along the Letort spring.

[1] William M. Baird, born in Reading, Pa., Aug. 4, 1817, died in Reading, Oct. 19, 1872. Entered Lafayette College 1834. Graduated at Dickinson College 1837. Admitted to Berks County bar, Reading, April 12, 1844. Mayor of Reading 1855–56. Collector of Internal Revenue, 8th District of Pennsylvania, 1869–1872.

[2] Dr. Alfred Foster, M. D., born 1790, died 1847. Graduated from Dickinson College in 1809. On his tombstone in the cemetery at Carlisle, Pa., is inscribed "Purity of mind and integrity of purpose graced his great attainments in science and literature; and his character happily blended the guilelessness of childhood with the wisdom of mature years."

I procured a singular variety of the Ruby crowned Regulus this spring. It has a patch of whitish feathers on the forehead.

I have already tresspassed too much on your patience, and will conclude by saying, that if I can be of the slightest assistance to you in any way, be assured that although others may tender it more ably, yet none can more cheerfully. I am Sir, very Respectfully

Your Obedient Servant
Spencer F. Baird

J. J. Audubon. F. R. S. &c.
[Superscription] John J. Audubon. F. R. S. etc.
86 White Street,
New York.

AUDUBON TO BAIRD.

New York, June 13, 1840.

Dear Sir,

On my return home from Charleston S. C. yesterday, I found your kind favor of the 4th inst. in which you have the goodness to inform me that you have discovered a new species of fly-catcher, and which, if the bird corresponds to your description, is, indeed, likely to prove itself hitherto undescribed, for although you speak of yourself as being a youth, your style and the descriptions you have sent me prove to me that an old head may from time to time be found on young shoulders!

I wish you would send me one of the stuffed specimens as well as the one preserved in spirits, and wish you also to rest assured that if the little *Muscicapa* stands as a nondescript that I shall feel pleased to name it after your friend.

I never have seen a specimen of the male of the Cape May warbler with the upper part of the head pure black. Have you compared the *Regulus* with the description of *Regulus Cuvieri*? Could you not send me your bird to look at? Being on the eve of publishing the Quadrupeds of our Country, I have thought that you might have it in your power to procure several of the smaller species for me, and thereby assist me considerably. Please to write to me again soon, as I must resume my travels in 8 or

10 days. Have you seen a copy of the small edition of The Birds of America which I am now publishing? Believe me, dear sir,

With good wishes, your obt. sert.,

John J. Audubon.

BAIRD TO AUDUBON.

Carlisle, July 14th, 1840.

Dear Sir

I send you those birds I spoke of some time ago and would have sent them sooner had I a suitable opportunity. I write in Carlisle but I shall take the box containing them to Reading, from which place or from Pottsgrove I will send them to Philadelphia. My Grandfather and father lived at Stowe a farm about one mile from Pottsgrove, and it is my intention to spend part of the summer in visiting the scenes of my childhood. Perhaps I shall reach your farm on the Perkiomen in my rambles, and I certainly shall in that event look for the cave in the bank of that creek, should it still exist there, and will listen to the song of the Pewee[1] if audible. I yesterday prepared a quantity of arsenical soap to take along with me, in hope of being able to procure some addition to my collections.

The thrush I sent was shot last spring, and I do not recollect anything about its manners. The *Regulus* was procured on a willow over the Letort spring.[2] It was in company with many Ruby crowned individuals. I send its measurements below. I have not been able to procure any more individuals of the new? species of *Muscicapa*. The stuffed specimen I send was much injured in shooting and could not be prepared well. Will you please tell me the name of that young warbler accompanying the other birds in the box. I shot two of them together on a hickory tree; they were rather inactive and uttered only a slight "*tsee*." The shrew in the box, I found last fall lying dead on a path along the Conedogwinit creek. Please tell me its name as I cannot identify it with any of

[1] See Audubon's account of the Pewee Flycatcher nesting in the cave on his "Mill Grove" Farm. (Ornithological Biography, Vol. II, 1834, p. 122.)

[2] A small stream that rises about two miles south of Carlisle, flows through the edge of the town and falls into the Conedogwinit Creek about three miles north of the town.

Godman's[1] animals. I must now explain to you the hieroglyphics on the labels attached to the legs of the birds. The figures on the left hand of the name signify its number in order among the birds stuffed this year. The figures on the other side of the label, have reference to the date of being shot. The first fig. shows the month, the second the day of the month, and the third the year. Thus 5.8.40 signifies May 8th 1840. If you desire it I will send you a list of the birds obtained and seen about here. We have as yet not more than about 125 species, excluding some of the common birds as the Flicker, Dove, Pigeon, Ferruginous thrush etc. which we have not yet stuffed, perhaps on account of the very facility of obtaining them.

I do not know who the individual is whose name is down on your list as Spencer Baird. Some time ago I sent down to Philada. for some numbers of your work, but did not become a regular subscriber which however I would gladly do were it in my power. A Gentleman possessing a large garden near Carlisle recently told me that among the humming birds seen about his flowers, he had frequently observed one apparently green all over, and much larger than any of the others, also one with yellow on its wings. I do not know whether he is hoaxing me or not, perhaps he is, however as he gave me an invitation to come and shoot some, I shall find out. Believe me Dear Sir.

Your Obedient Servant.

Spencer F. Baird.

John J. Audubon.

Regulus — Shot April 16, 1840.

Length to end of tail 4 1/4, of Wings 3 1/2, of claws 4 1/4. Wing from flexure 2 5/16. Bill along ridge $\frac{4\,1/2}{16}$ edge of upper mandible $\frac{7\,1/2}{16}$ Tarsus Middle toe and claw $\frac{10}{16}$.

BAIRD TO AUDUBON.

Carlisle December 10th, 1840.

Dear Sir.

I take this occasion of writing to you to let you know what I have

[1] John D. Godman, author of 'American Natural History' (1st. ed. pubd. 1823), 'Rambles of a Naturalist,' etc., etc. Professor of Natural History in the Franklin Institute of Pennsylvania. Born Dec. 1794, died April, 1830.

been doing in the Bird line since I last wrote you. I was away from home all last summer and part of the fall, but when I reached Carlisle in October I set to work with redoubled zeal. It was a source of great regret to me that I was not able to meet you in Philadelphia when I was there during the latter part of September. I saw Mr. Chevalier [1] several times, and found him a very agreeable gentleman.

I have obtained a number of new species since I returned, principally ducks, hawks, owls etc. Some of them are the Scaup duck, the Shoveller, the short eared owl, the long eared owl, the great American Shrike, the Blue Grosbeak together with many others. I also have two more species, descriptions of which I cannot find anywhere. The first is a *Muscicapa*,[2] obtained Oct. 12th. Body stout, feet long & stout, 3d quill longest. Head dark brown, rest of upper parts greenish olive, lower parts sulphur yellow. Tail edged & tipped narrowly with white. Bill & feet deep black. Lateral outline of upper Mandible slightly convex. Lower mandible with the ridge very distinct. Length to end of tail 6 5/12 ext. 10 3/4. Tarsus $\frac{9\,1/2}{12}$ Bill 1/2. Tail 2 11/12.

The other bird is a very small woodpecker.[3] Has the family look of all the small woodpeckers. Strongly different from all the others. Upper part of head red, lower parts dirty yellow, with a few brown spots on the abdomen. Bill short very broad, with the three ridges of the upper mandible very distinct. Upper mandible brown, lower whitish, both mandibles with the dorsal outlines *convex*, and the bill pointed. Length 5 1/2, wing 3 1/4. If you wish it I will send a more minute description.

What do you think of the birds etc. I sent in the small box. Please to tell me the name of the shrew, and young warbler contained in it.

[1] J. B. Chevalier. His name appears in Vols. I to V. "Birds of America," 8vo, 1840, as the Philadelphia publisher. In the latter part of his life he was unfortunate and was taken care of and provided for by Audubon and his sons up to the time of his death.

[2] The description strongly indicates *flaviventris* but the measurements of length and extent considerably exceed the average of this species.

[3] Probably *D. pubescens* in immature plumage. In the Baird Bros. 'List of Birds found in the vicinity of Carlisle, Cumberland Co., Penn.,' 1844, the species preceding *Picus pubescens* is indicated thus, "*Picus* . One specimen obtained." The bird referred to in this letter is possibly the *Picus* in the List with the specific name wanting.

I have been using every exertion to obtain quadrupeds, but with little success as yet. I however have recently secured several valuable auxiliaries from whom I expect a great deal. One of them told me that he had caught last winter a rabbit quite Brownish red.

Professor Allen [1] of our College here told me an anecdote respecting a weasel, which anecdote he had from a highly creditable source. It happened in Maine. "A weasel was introduced into a cellar for the purpose of destroying rats, which he succeeded in doing, with the exception of two or three very large ones. He finally succeeded in killing these in the following ingenious manner. He dug a hole in the ground wide at the entrance, and narrowing gradually from the entrance until it was just wide enough to allow the weasel to pop when it opened again in the air. He was then seen to run into this hole pursued by a large rat, to run out of the narrow end, and immediately to run into the other end again, and attack the rat from behind, and kill it. In this way he succeeded in exterminating the whole." He assured me the story was worthy of all credit.

A week or two ago I shot a Bay Lynx or Wild Cat a mile & a quarter from Carlisle. It was 2 1/2 feet long & weighed 12 1/2 pounds. The general color of the Pelage is of a light yellowish brown, mixed with greyish white. The former most conspicuous about the head & rump. Belly white spotted with black. Fore legs transversely banded with several black stripes inside. Fore legs barred with greyish white on a Brownish red ground outside. Tail yellowish brown above, white beneath a patch of black at the end above. Ears black at base then a triangular space of white, then margined black again. I have a much fuller description & table of measurements in my note book.

Please to let me know when you commence publishing your "Biography of Quadrupeds" etc., and on what plan it is. Expense etc. I remain.

Your Obedient Servant
Spencer F. Baird.

John J. Audubon. F. R. S.
New York
No. 86 White St.

[1] William Henry Allen, M. D., L. L. D., born March 27, 1808, died August 29, 1882. Professor at Dickinson College, Carlisle, Penn., from 1836 to 1849.

AUDUBON TO BAIRD.

New York, December 25, 1840.

My dear sir,

On my return yesterday from a tour of a month, I found your kind favor of the 10th inst. at my house. I regret exceedingly that you and I should not have met at Philadelphia, as I feel sure by the style and contents of your letters to me that you are fond of the study of natural objects, as much as I am.

I have no doubt that your journey during the last summer and autumn was a pleasing one to you, as I can well conceive from the fresh recollections of my many rambles.

You would oblige me much by sending me (through Mr. Chevalier) the *Muscicapa* you obtained Oct. 12th, and also the small woodpecker "with the very broad bill" I am anxious to see those birds, and will take especial care of them, and also return them to you, free of all expense.

I cannot at this moment return to the specimens you have already sent me, but in my next letter, I will assure you of the names of the subjects. I wish I could see your Bay Lynx, as I feel somewhat confident that we have more than two species within our limits.

Your anecdote connected with the sagacity of the Weasel[1] is quite pleasing to me, and will appear in my biographies of quadrupeds bye and bye. I cannot, as yet, give you any estimate of my work on the Quadrupeds of our Country but will do so as soon as possible. With my best wishes, for your health and prosperity, I pray you to consider me as your friend and obt. servent,

John J. Audubon.

BAIRD TO AUDUBON.

Carlisle, June 21, 1841.

Dear Sir

The spring having finally passed by and the migratory birds with it, I take the occassion to let you know the result of the labors of my brother and myself this season. As a general thing birds

[1] Reference to his work shows that the anecdote was not included in the biography of the Weasel.

of all kinds were unusually abundant this spring, nearly all having been found which have been seen at any time before. Many rare birds were found in great abundance, indeed some in such quantities as to induce the belief of Cumberland Valley being on the line of the main route in proceeding north. *Sylvicola Maritima* as usual was rather plenty. Three were shot this spring, as well as three last year. They were always found single or associated with a few individuals of *S. Blackburniæ*, *S. Icterocephala*, *S. Virens* etc., and in every situation. Orchards, Willow trees, dry rolling woods & Bottoms. *S. Blackburniæ* abounded. Some times as many as forty or fifty were seen in a day. *S. Icterocephala* was exceedingly common, indeed for two or three days, as much so as *S. Coronata*. One day at the North Mountain we must have seen four or five hundred. *S. Castanea* was not so abundant. *S. Maculosa* exceedingly abundant several days. *Trichas Philadelphia* was met with five times, two specimens, male & Female were obtained, one also last year, a female. The two Females differ considerably, both in size and in color. *Helinaia Rubricapilla* was very common. We shot six or eight in one day & could have shot more. *Helinaia Solitaria* was rather common. *H. Peregrina* was met with once. *Myiodioctes Canadensis* exceedingly common. *Myiodioctes Wilsonii* abundant, fifteen & thirty often seen in a day.

There is one flycatcher respecting which we are in doubt, and which was very abundant this spring. It is the one we had considered *M. Pusilla* but a thorough examination of the Biography, has thrown doubt on this supposition, it agrees pretty well with the *M. Acadica* of Nuttall, but not with the *Acadica* of the Synopsis. I will send you one as soon as possible that you may decide the question, as there is no set of Plates in Carlisle to which we might refer. The small yellow bellied Flycatcher which I sent you last summer, was very abundant this spring. Do you wish any more specimens? Dr. George C. Leib[1] of Philadelphia procured that same bird last year, and it was proposed I believe by the Philadelphia Ornithologists to name it *Muscicapa Leibii*, which would do very well. The thrush I sent you, was also quite common in

[1] A resident of Philadelphia, Pa. Described *Fuligula grisea* in 1840. Died prior to 1856.

the mountains around here. Mr. Nuttall indicates it in his description of *Turdus Wilsonia*, or *T. Solitarius*. We obtained two genuine *Muscicapa Traillii*, agreeing precisely with the description, as to size, color, proportion of quills etc. If you have ever been in Cumberland County you will be aware that two parallel ranges of mountains run east & west about six miles from Carlisle on each side. These appear to be the headquarters of the *Sylvicolidæ* and many others, from where they sally out into the Valley. Of course they are always found in the greatest abundance there. It was in the Northern range, called the North Mountain that we met with *Troglodytes Bewickii*. Three individuals were seen early in the spring and I saw another a few days ago near the very place where I had shot one of the others. *T. Palustris* was shot in a little pond in the South Mountain.

I was considerably surprised at meeting with a small flock of the Pine finch (*Linaria Pinus*) on the 28th of last May. The specimens obtained, (Male & Female) were very bright. Three specimens (one male & two females) of *Peucea Lincolnii* were added to our collection. Two found on apple trees in the Valley, the other on a pine near the mountain.

Fringilla Leucophrys was very abundant. One day at least sixty were seen in small flocks all over the country.

Coccoborus Caruleus was obtained at the North Mountain, this spring. Only two were seen. — *Vireo Solitarius* was so common that dozens could have been shot in a day.

You will perhaps be surprised to learn that the South Southerly, *Fuligula glacialis* occurs in the Conedogwinit creek near this place. We obtained two specimens, male & female. The first was caught in a small Pond about three miles from town, where it had alighted & where it was unable to escape the Puddle being but three or four yards broad. The other was shot in the creek while flying past my brother. A man living near that water told us that he several times early in the spring had shot a small Black & white duck with a very long tail. May we not expect to see you in Carlisle before a great while?

It would give us very great pleasure indeed. I remain

Yours sincerely

Spencer F. Baird.

I omitted to mention the case of an *Astur* which we shot on the 9th of May last. It is very like the young Male of *Astur Fuscus*, the principle difference being in size. The dimensions were as follows. Length to end of tail 16 inches, of wings 11 3/4, of claws 13 1/4, From flexure 8 1/2, extent 28. The specimen was a *Male*. There could be no mistake about the sex, as the testes were large & very apparent to the eyes of both myself and my brother. Can this be *Astur Fuscus?* The fourth quill is longest. The bird appears at least three times as large as a specimen (Male) of *Astur Fuscus*.

S. F. B.

John J. Audubon, Esq.
No. 86 White St.
New York

AUDUBON TO BAIRD.

New York, July 29, 1841.

My dear Sir,—

I have not had time to answer your interesting favor of the 21st until this morning, being now constantly engaged in the figuring, &c., of the Quadrupeds of Our Country; by which I mean that I actually work from daylight every day until I retire to my necessary repose at night.

Your observations upon the birds of passage the last spring are what they have been almost throughout the U. S. The very backward spring which we have experienced this year did no doubt retard the coming into the States the millions of passenger birds that come to us from beyond our limits. The Fly-catcher of which you are in doubt is nevertheless the *M. Pusilla*, and you must not be surprised to find *perhaps* some discrepancy between the specimens you have procured and the descriptions you may have read, as among mine these differences are quite obvious and belonging to either sex or age, as is indeed the case with most of our birds as well as among many of our quarupeds. Thus, the small yellow bellied Fly-catcher of my friend Læib is nothing else than an adult male of this species! As to the Thrush which I have of yours it is quite in the same predicament being only a Bird of 12 months old of the *Turdus mustelinus* of Wilson. I am indeed surprised that

you should have perceived the "South Southerly" about you, this is, however, no more than an accident, that you should have met with the Golden Eye is not at all strange, as that species occupies at different periods almost any stream of the Union.

I cannot at present tell you when I may have the pleasure of meeting with you at your own domicile, and yet this may happen quite unexpectedly.

Do you not pay attention to the quadrupeds around you? If not, I wish you would!—and moreover I should be highly pleased to hear of your procuring for us all such as may be found in your vicinity. You have *Bats, Wood Rats, & Mice, Weasels, &c., &c.*, all of which I should like to possess specimens at your hands. Could you not save all that you come across with in this way, place them in *common good Rum*, and forward them to me at once or as soon as you have some 2 or three species. I will most cheerfully pay all expenses to Philadelphia addressed to *J. B. Chevalier*, No. 70 Dock Street.

I am now as anxious about the publication of the Quadrupeds as I ever was in the procuring of our Birds, indeed my present interest in Zoology is altogether bent toward the Completion of this department of Natural Science.

Do please write to me often as I am always glad to hear from you, and when I am somewhat slow in answering your letters, be assured that it is altogether on a/c of the excess of Labour that I have to go through.

Believe me with sincere good wishes
Your friend and servant,
John J. Audubon.

(*To be continued.*)

AN ASTRONOMICAL DETERMINATION OF THE HEIGHTS OF BIRDS DURING NOCTURNAL MIGRATION.

BY FREDERIC W. CARPENTER.

TWENTY-FIVE years ago W. E. D. Scott, in the 'Bulletin of the Nuttall Ornithological Club,'[1] called attention to the telescope as a means for actually observing against the moon as a background the nocturnal migratory flight of birds. Realizing the possibilities of this method in throwing light on the unsettled question of elevation, Mr. Scott, with the aid of Professor Young of the Astronomical Department of Princeton University, made the following observations and calculations. A nine and one-half inch telescope was pointed toward the moon in the month of October, 1880. Numbers of birds were seen flying in a general southeasterly direction. Since these birds were clearly outlined they must have been at least one mile from the observers, for if nearer the telescope they would have been out of focus. A distance of one mile was, therefore, taken as the inferior limit of the field of observation; and on the assumption that birds would not fly at a greater height than ten thousand feet the superior limit of the field was fixed at a distance of four miles. These distances and the angle at which the telescope was inclined gave the data for the conclusion that the birds observed were flying from one-half[2] to two miles above the earth.

F. M. Chapman followed a few years later with a report in this journal[3] of observations made with a six and one-half inch telescope during a night in September, 1887. With the assistance of an astronomical friend, John Tatlock, Jr., the writer prepared a table

[1] Scott, W. E. D., '81. Some Observations on the Migration of Birds. Bull. Nuttall Ornith. Club, Vol. VI, No. 2, pp. 97–100, 1 fig. Migration of Birds at Night. *Ibid.*, No. 3, p. 188. Note by J. A. Allen appended to each article.

[2] This lower limit is given by J. A. Allen and Newton and Gadow as one mile. In the original paper Mr. Scott makes no actual statement of the dimension, but in his figure (p. 100) the distance is represented by the perpendicular of a right triangle, having an angle of 30° opposite, and an hypotenuse one mile in length. This would make the perpendicular one-half mile long.

[3] Chapman, F. M., '88. Observations on the Nocturnal Migration of Birds. Auk, Vol. V, No. 1, pp. 37–39.

showing the probable limits of height between which the birds were flying. In so doing it was necessary to assume that the least distance from the observer at which birds could be seen was one mile, and the greatest distance five miles. The computation of the heights showed that the birds were flying between six hundred and fifteen thousand feet; and since it was evident that "the major portion passed at what may be termed the middle distance" the average height was apparently far above the inferior limit. To both observers a nearer approach to an accurate measurement of the altitude did not appear possible. Mr. Chapman wrote: "The problem of determining this height exactly is not, so far as we can now judge, capable of a definitive solution, for the reason that we have no means of ascertaining the distance of the bird from the observer."

The foregoing observations have been accepted by J. A. Allen,[1] Newton and Gadow[2] and other ornithologists as fair evidence that migrating birds fly at night at very considerable altitudes, and comment has often been made on the favorable position in which birds are thus placed for observing the prominent features of the landscape which may serve to guide them on their way. As an example of an extreme view in this connection it should be recalled that Gätke in his book entitled 'Die Vogelwarte Helgoland' gives his reasons for supposing that an altitude of thirty thousand feet or even more may be attained.

More recent attempts to measure the altitude of the migratory flight have indicated that this has been over-estimated. The methods used have, however, like former ones, involved apparently unavoidable assumptions, which, though probable, do not admit of strict verification.

The heights of migrating birds seen against the moon in September, 1896, at the Ladd Observatory, Providence, Rhode Island, were calculated by F. W. Very,[3] who compared the apparent size

[1] Notes appended to the articles by W. E. D. Scott cited above. Also review of Gätke's 'Heligoland.' Auk, 1896, Vol. XIII, No. 2, pp. 137–153.

[2] Newton, A., and Gadow, H., '93–96. A Dictionary of Birds. London, xii + 1088 pp.

[3] Very, F. W., '97. Observations of the Passage of Migrating Birds across the Lunar Disk on the Nights of September 23 and 24, 1896. Science, N. S., Vol. VI, No. 141, pp. 409–411.

of the birds with the size of prominent lunar features. Assuming the average actual length of these birds (presumably small ones) to be six inches, he was able to compute their distance from the observer and their height above the sea-level, the latter proving to be about two thousand feet. A larger bird, whose distance was determined by focal adjustment, had an altitude of only 687 feet.

In an extensive paper[1] on bird migration published in 1902, H. A. Winkenwerder gives the result of work done by himself and several collaborators in different parts of the country. At Beloit the telescope directed toward the moon's disk showed birds which were apparently following the course of a river not far from the observatory. It being taken for granted that these birds were over the river it was an easy matter to determine their approximate heights. The majority were not over fifteen hundred feet from the earth. The same conditions at Detroit gave evidence that the flight was "somewhat more than one-half mile above the surface.'

Two papers concerned with the height of birds in diurnal migration have come to my notice. In England R. A. Bray,[2] while looking at the sun through an eight-inch telescope at three P. M. on September 30, 1894, saw birds pass slowly across the field in a southerly direction. The birds came one every few seconds for a space of ten minutes. They were invisible to the unaided eye. As both the birds and the sun were in focus the former must have been, in the opinion of the writer, two or three miles away.

The height as well as the velocity of a daytime flight of ducks were accurately determined in December, 1896, by H. H. Clayton[3] at the Blue Hill Observatory, Massachusetts. This observer, assisted by S. P. Fergusson, was engaged in measuring the heights and velocities of clouds, making use of theodolites especially adapted to these purposes. The appearance of a flock of ducks flying southwest gave opportunity for applying the instruments to or-

[1] Winkenwerder, H. A., '02. The Migration of Birds with Special Reference to Nocturnal Flight. Bull. Wis. Nat. Hist. Soc., N. S., Vol. II, No. 4, pp. 177–263, pls. i–viii, 1 photo.

[2] Bray, R. A., '95. A Remarkable Flight of Birds. Nature, Vol. LII, No. 1348, p. 415.

[3] Clayton, H. H., '97. The Velocity of a Flight of Ducks Obtained by Triangulation. Science, N. S., Vol. V, No. 105, p. 26. The Height and the Velocity of the Flight of a Flock of Geese Migrating Northward. *Ibid.*, No. 119, pp. 585–586.

nithological ends. Their readings indicated that the birds were 958 feet above the ground, and were flying at the rate of 47.8 miles an hour. Under similar conditions in March of the following year the same observer ascertained that a flock of geese migrating northward was 905 feet high, and had a velocity of 44.3 miles an hour.

During the spring and autumn of 1905 Professor Joel Stebbins of the Astronomical Department of the University of Illinois and the writer made a series of observations on the nocturnal flight of migrating birds. The work was done at the Astronomical Observatory in Urbana, Illinois. Professor Stebbins became interested in the matter of determining the heights of the birds, and devised a method which we believe furnishes the solution of this problem. The entire credit for accomplishing this belongs to Professor Stebbins, who has published in the February number of 'Popular Astronomy'[1] a full account of his procedure with the mathematical data and calculations. The object of the present paper is to bring to the attention of ornithologists the results of this successful application of astronomical methods to a hitherto unsolved biological problem.

In order to obtain the necessary data for the computations two telescopes were used in making the observations. These were three-inch and four-inch equatorial instruments, placed from ten to twenty-one feet apart on a line running east and west. The magnifications were about twenty-five and thirty diameters respectively, and the powers being low objects as near as one thousand feet could be seen without difficulty. Both telescopes were directed toward the moon, and an observer stationed himself at each. Birds passing through a certain area between the telescopes and the moon could be simultaneously seen by the two observers. In the accompanying diagram this area is included by the triangle *E C D*, through which the majority of the birds flew approximately at right angles to the plane of the figure. There are also shown the two areas, *A C E* and *B D E*, in which passing birds were visible to one of the observers only. The figure has necessarily

[1] Stebbins, J., : 06. A Method of Determining the Heights of Migrating Birds. Popular Astronomy, Vol. XIV, No. 2, pp. 65–70, 2 fig. Also separate, pp. 1–6 (repaged).

been drawn out of its true proportions, the horizontal dimension being greatly exaggerated as compared with the vertical.

The eye-piece of each telescope was provided with cross-hairs which divided the field into octants, and each observer had at hand an outline drawing of the phase of the moon for the night. On this chart were drawn radiating lines corresponding to the cross hairs of the eye-pieces. The telescopes were centered on the moon's disk, the whole of which appeared in the fields of view, and each eye-piece was rotated until one of the cross-hairs was parallel with the diurnal motion of the moon. Birds which passed through the areas limited to one telescope (*A C E* or *B D E*) were merely counted by the observer who saw them, but when a bird appeared in the area covered by both telescopes (*E C D*) its course across the face of the moon was immediately marked on the charts by straight lines, and the hour was noted. The cross-hairs made it possible to locate with considerable accuracy the line described by the bird in passing before the moon's disk. These lines of flight were recorded by the observers independently, and appeared at different places on the two charts, as can readily be seen by considering the projection from *A* and *B* of any point (representing the bird) in the area *E C D* upon the line *C D*, which indicates the moon's disk. The distance between these two projections of the point will vary in accordance with variations in the vertical position of the

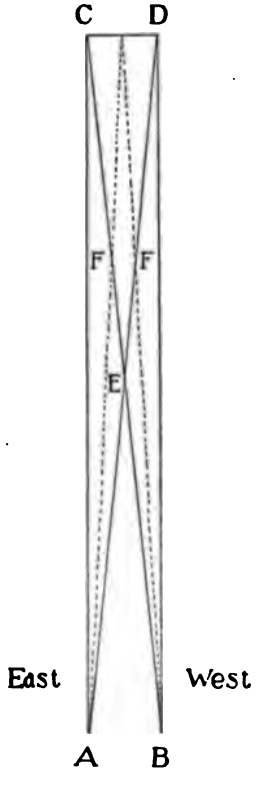


Diagram showing areas of observation. A and B, telescopes; C D, moon's disk; A C D, area of observation for telescope A; B C D, area of observation for telescope B; E C D, area in which birds were simultaneously visible through both telescopes; A C E, area in which birds were visible through telescope A only; B D E, area in which birds were visible through telescope B only.

point in question, *i. e.*, with the distance of the bird from the telescopes.

With these chart records and the necessary astronomical data Professor Stebbins was able to ascertain the "parallax" of each bird, that is, the angle at the bird subtended by the two observers, which is equal to the angular distance between the two lines of flight appearing on the chart. Using this as a basis the distance of the bird from the observers and its height above the ground were computed. The probable direction of flight was also determined, although in so doing it was necessary to assume that the flight was horizontal, as it doubtless was in the majority of cases. This assumption was not needed in calculating the heights.

The accuracy of the measurements depended on the skill of the observers in making their records and on the amount of "parallax." In Professor Stebbins's opinion the computation of the greatest height (5400 feet) involved a possible error of twenty-five per cent., while the lesser heights were probably correct within ten per cent.

Observations were made on several nights in both spring and autumn, the best success being met with on May 19–20, and October 10. On the first date 78 birds were seen during two and one-half hours, 11 by both observers, 33 by Professor Stebbins only, and 34 by the writer only. On October 10, in two hours, 57 birds were counted, 11 being visible through both telescopes: of the remainder Professor Stebbins saw 17 and the writer 29.

From nine satisfactory chart records of each night Professor Stebbins has prepared the material for the following tabular views.

TABLE I.

Birds migrating on the night of May 19–20, 1905, one day after full moon. Weather clear. Wind northwest, 4 miles an hour. Temperature at 9 P. M. 55° F.

Number of bird	1	2	3	4	5	6	7	8	9
Time of observation	10.06	10.18	10.38	11.24	11.40	12	12.09	12.24	12.33
Distance from observers in ft.	7100	4100	5600	4300	3400	4900	3100	2400	2600
Height above ground in feet	2300	1500	2200	2000	1600	2400	1500	1200	1300
Direction of flight	W N-W	W N-W	N-W	N-W	N-W	N N-E	N N-W	N-E	N-W

TABLE II.

Birds migrating on the night of October 10, 1905, three days before full moon. Weather clear. Wind west, 12 miles an hour. Temperature at 9 P. M. 48° F.

Number of bird	1	2	3	4	5	6	7	8	9
Time of observation	9.15	9.25	9.32	9.45	9.49	10.06	10.25	10.38	10.55
Distance from observers in ft.	5800	3600	2800	6700	2100	7700	5800	2100	3300
Height above ground in feet	4000	2500	1900	4700	1400	5400	4100	1400	2300
Direction of flight	S-E	S by E	S S-E	S by E	S	S S-E	S-E	S S-E	S

Table I shows that on May 19–20 no birds were one-half mile above the ground, and one was as low as 1200 feet. On October 10, however, as can be seen from Table II, a single bird was slightly over a mile high. Three others ranged between one-half and one mile, while the remaining five were below one-half mile, two being at an elevation of 1400 feet only. It should be noted that the position of the telescopes did not permit the measurement of birds which may have been lower than the point marked *E* in the diagram, which point on May 19–20 varied between 550 and 1100 feet from the ground, and on October 10 between 750 and 800 feet. As the diagram shows, the area of simultaneous observation (*E C D*) becomes narrower as the point *E* is approached, and as a consequence the chances of birds appearing therein are correspondingly decreased.

The conditions, then, were most favorable for the detection of the uppermost birds, and it seems probable that the majority were considerably below the highest records obtained. On both nights the calls of birds apparently not far overhead were frequently heard. Furthermore, Professor Stebbins has determined the upper limit of over half of those birds seen by one of the observers only on October 10, and shows that these must have been below 1600 feet. In the diagram it will be seen that the area of observation of each telescope has been divided into halves by dotted lines. If the observer at *A* saw a bird, not seen from *B*, against the right half of the moon that bird must have been in the area *A F E*.

Similarly, a bird seen from *B* only, against the left half of the moon must have been in the area *B F' E*. On October 10 the points *F* and *F'* ranged between 1500 and 1600 feet from the ground, never being higher than the latter distance. Of the 46 birds seen by the observers separately, 24 were in the areas *A F E* and *B F' E*, and, therefore, certainly less than 1600 feet high. The remaining 22 birds were in the areas *A C F* and *B D F'*, and the upper limit of their height could not be determined.

If observations and measurements such as those recorded above could be made at various places over the country, especially along well traveled routes of migration, the result would be an accumulation of statistics in regard to the height and direction of the migratory flight, the value of which is apparent to every ornithologist.

GENERAL NOTES.

Audubon's Shearwater and Peale's Petrel Breeding in Bermuda. — On March 4, 1906, Mr. Louis L. Mowbrey of St. George, Bermuda, took an Audubon's Shearwater (*Puffinus audubonì*) and egg on a small islet off the southeastern end of Bermuda. Another bird and egg were taken on March 11. In each instance the bird was taken on the nest, which was in a hole of the rock withqut moss or lining of any kind. As far as I can learn this is the most northern record for the breeding of this bird. One of these birds and an egg is now in my collection.

On Feb. 22, 1906, Mr. Louis L. Mowbrey took a Peale's Petrel (*Œstrelata gularis*) in a hole of the rock overlooking the sea and washed by the spray. The bird was taken after a southwest gale. Peale's Petrel is not included in the A. O. U. Check-List, but I am sure of the identification of the bird, and am glad to be able to put on record the first instance of Peale's Petrel being taken in the Northern Hemisphere. The bird is now in the collection of the Bermuda Natural History Society.— THOMAS S. BRADLEE, *Nahant, Mass.*

The Water Turkey and Tree Ducks near Tucson, Arizona.— September 12, 1893, a Water Turkey (*Anhinga anhinga*) was killed on Silver Lake, a small body of water on the Santa Cruz, about two miles south of Tucson. At that time it was the only bird of the kind I ever saw, and, so far as I know, the only one taken in the Territory. It was a female

in fine plumage and provoked much interest among local sportsmen, as nothing like it had been seen thereabouts before. It measured — length 34 inches, extent 45 inches, wing 12.25, tail 11, and bill, along the culmen, 3 inches. Last winter a farmer living in the valley a few miles below here brought me a tail feather with a crimped web. It was from a darter he had killed on one of the lagunas on the Arizona side of the river. Later I saw and counted seven of them. As they were out of gun range I did not disturb them. From what I can learn from people living near the water the bird is not uncommon in that portion of the valley.

I lived about twenty-three years in central southern Arizona and during that time I remember having seen but two Fulvous Tree Ducks (*Dendrocygna fulva*). They were brought to me from a lake near Buenos Ayres, about seventy miles southwest of Tucson. Here I find them fairly abundant during the winter months. In the spring of 1899 one was brought to me for identification. It had been killed on a small patch of water on the California desert. April 27 I counted 11 in one bunch at the mouth of the Gila. October 12 of that year I saw a lone bird on the mud flats in that same neighborhood. It was a male and was quite thin in flesh. I have a record of having seen 27 in four years. When feeding they thrust their mandibles deep in the soft mud on both sides and in front of them as they walk along.

May 5, 1899, 6 out of a bunch of 8 Autumnal Tree Ducks (*Dendrocygna autumnalis*) were killed on the Santa Cruz, south of Tucson. They were the first and only ones I ever saw in Arizona. They were beautiful things. I did not find anyone that had previously seen them in Arizona.— HERBERT BROWN, *Yuma, Arizona.*

An Arctic Record for the American White Pelican.— An American White Pelican (*Pelecanus erythrorhynchos*) was taken on the shores of Liverpool Bay, in the Arctic Ocean, in June or July, 1900, by an Eskimo who skinned it, removing nearly every bone in the process. The bird was secured there soon afterwards by the Rev. I. O. Stringer, now Bishop of Selkirk, who brought it to Toronto, and through the kindness of Mr. John Maughan the bird is now in my collection. Bishop Stringer tells me the bird was new to the Eskimo. Liverpool Bay is in Lat. 70°, Long. 128°. — JAMES H. FLEMING, *Toronto, Ont.*

Unusual Nesting Site of the Black Duck (*Anas obscura*).— During the past two years I had the pleasure of discovering two instances of remarkable deviation from the hitherto well known and universally recognized nesting habits of our common Black Duck (*Anas obscura*). The first instance occurred June 10, 1904, when, on a small island in the St. Lawrence River, a pair of these ducks had taken possession of an old crow's nest, and on the date of discovery had laid ten eggs. The nest was saddled on a limb of a large elm, forty-five feet from the ground. With the exception of a liberal supply of down furnished by the bird the

nest was in its original condition and so completely was it concealed by the foliage that the presence of the duck in her snug retreat would never have been suspected had she not been accidently observed flying to the tree. The difficulty I experienced in photographing the nest adds to the value of the excellent negative I secured.

April 29, 1905, I located the second nest; in this case, owing to the bareness of the trees, concealment was impossible. The duck had laid ten eggs in a last year's nest of the Red-shouldered Hawk in a basswood tree fifty feet up, and the appearance of this large bird sitting on her nest among the naked branches was truly most unique.

In the different works on American ornithology to which I have had access, none of the writers refer in any way to this phase of the bird's life, but in a book on English natural history entitled 'Lakes and Streams' by C. O. G. Napier, published in England in 1879, the writer speaks of the Mallard (*Anas boschas*) as having been found nesting "in a crow's nest at least thirty feet from the ground."

In the two cases I have cited the ducks successfully brought off their broods but by what means they conveyed them to the neighboring marsh I could not ascertain. Both nests were in trees overlooking extensive marshes and in different parts of the county being, possibly, twenty miles apart.— EDWIN BEAUPRÉ, *Kingston, Ont.*

Lesser Snow Geese in Michigan and Ontario.— In view of the few of these birds upon record, it seems advisable to announce the capture of two Lesser Snow Geese (*Chen hyperborea*) in this vicinity. The first one was taken Oct. 27, 1905, at the base of Point Pelée, by Mr. Sidney Stanlick of Leamington, Ont. The bird is an immature female in the dusky plumage and is probably a bird of the year. In plumage and measurements it appears to be typical, but the line of the culmen shows a variation due to either individual variation or else malformation. The bird had evidently been injured before Mr. Stanlick took it. It is now in the collection of Mr. Taverner, numbered 424.

The other bird was killed Nov. 5, 1905, by Mr. Frank Mather at Goose Creek, St. Clair Flats, as it passed over his blind in company with another bird which he called a "Black Brant" but which was perhaps another *Chen*. The goose is still in his possession.

We examined the bird in the taxidermy studio of Mr. L. J. Eppinger before it was mounted but, unhappily, not before it was skinned; consequently no length measurements could be taken nor the sex ascertained. Beyond all doubt, however, it is an adult male. Every effort was made to properly identify this bird, and a careful drawing was made of the bill and submitted to Dr. Louis B. Bishop who pronounced it identical with *hyperborea* specimens of his from the Dakotas. Mr. Taverner also compared the drawing with specimens in the collection of Mr. J. H. Fleming and found it to agree with specimens of *hyperborea* and quite different

from *nivalis*. Though the measurements are well up into those given for the latter in most of our manuals Dr. Bishop says they come within those of *hyperborea* as illustrated in his series. With this evidence we have no hesitancy in recording this specimen as *Chen hyperborea*.

The status of the two forms in the Middle West seems to be but little understood and exact information as to their occurrence and distinctive features is difficult to get. From all we can gather *C. h. nivalis* appears to be essentially a bird of the Atlantic Coast, and if it does occur in this section it is only as a straggler. From all the inquiries we have made it is evident that there is much to be learned in regard to these allied forms and that a closer and more careful study of them will overthrow many of the published ideas on the subject. The present specimens of *nivalis* from the Middle West should be subjected to a more careful study to settle these points.

Measurements of Specimens.

	Length.	Wing.	Tail.	Tarsus.	Culmen.	Height of bill.
St. Clair Flat bird,	—	17.75	6.5	4.25	2.2	1.4 inches
Point Pelée bird,	27.5	16	5.25	2.75	2	1.2 inches

— P. A. Taverner and B. H. Swales, *Detroit, Mich.*

The Yellow-crowned Night Heron near Toronto.— While engaged, last year, in naming and arranging the collection of Canadian birds at the Provincial Museum in this city, I found an immature Night Heron, which proved on examination to be a young "Yellow-crowned" (*Nycticorax violaceus*). Mr. John Maughan, Jr., who mounted the specimen, has kindly looked up its record, and finds that it was taken on August 15, 1898, at his father's farm near the Woodbine, Toronto. This is, I think, the first time that the bird has been taken in Ontario, though there are one or two records of its appearance in eastern Canada.— J. B. Williams, *Toronto, Ont.*

The Red Phalarope (*Crymophilus fulicarius*), **a new Bird for the Kansas List.** - A young female Red Phalarope was killed at Lake View, five miles northwest of Lawrence, Kansas, November 5, 1905, by E. E. Brown, of the University of Kansas. The bird was flushed from grass and weeds that grew in shallow water. It was the only bird of the kind seen, and, so far as I know, is the first one ever observed in the State of Kansas. As the Red Phalarope is a maritime bird, breeding on the shores of northern bodies of salt water, and spending most of its time on the ocean, its appearance in Kansas was unlooked for. The one taken must, for the present at least, be looked upon as a straggler. It may have been carried out of its usual course by a storm, or may have fallen in company with other birds that go far inland. — L. L. Dyche, *University of Kansas, Lawrence, Kan.*

The European Lapwing on Long Island, N. Y. — A European Lapwing (*Vanellus vanellus*) was shot late last fall on the grounds of Dr. Eagleton, Meccox Bay, Watermills, Long Island. The bird was in good plumage and health.— C. WILLIAM BEEBE, *New York Zoological Park, New York City.*

Occurrence of the Lapwing (*Vanellus vanellus*) and the Turkey Buzzard (*Cathartes aura*) in Newfoundland.— Dr. R. R. McLeod of Brookfield, Nova Scotia, has been kind enough to place at my disposal some brief notes relating to the recent capture in Newfoundland of a Lapwing (*Vanellus vanellus*) and a Turkey Buzzard (*Cathartes aura*). The data just mentioned consist (1) of extracts copied by Dr. McLeod from a manuscript letter addressed to him by "the Editor of the St. Johns [Newfoundland] 'Evening Herald,' Mr. Forneaux"; (2) of a newspaper clipping bearing neither title nor date, but with the letters "J. E. F." inscribed in pencil on the margin; (3) of a printed letter signed and dated "James P. Howley, November 27, 1905." As the "J. E. F." clipping contains several sentences closely similar in expression, as well as thought to some of those in the letter written to Dr. McLeod, I assume that the initials just quoted represent the name J. E. Forneaux and that the account to which they are appended was written by him for the St. Johns 'Herald.' The letter by Mr. Howley is printed on paper of a different quality and color. It was apparently taken from some daily newspaper and, no doubt, from one also published in Newfoundland.

Mr. Forneaux writes to Dr. McLeod that "'the wanton lapwing' was shot on the 23d of November, 1905, and the Buzzard a few weeks before. I handled the lapwing and it was in excellent condition, being quite plump and its beautiful plumage scarcely ruffled. It was killed about a mile inland from the sea-shore, making its way south, just outside the city limits. Does it not seem the 'irony of Fate' that the brave little traveller that had come so far through storm and tempest should fly right over a man behind a gun and fall a victim to his unerring aim. He was probably the only hunter in a vicinity that covers many miles of country. Both birds will be mounted and placed in the museum in charge of Mr. J. P. Howley." In his newspaper account "J. E. F." says that the locality where the Lapwing was killed is "in the vicinity of the White Hills."

Mr. Howley states that the Turkey Buzzard "was shot by Mr. Jocelyn near Renews, not far from the whale factory at Aquaforte." "Can it be possible," he asks, "that it has been attracted by the whale offal floating southward on the bosom of the Arctic current, and has it followed up the scent to locate the origin thereof?" The Lapwing, he says, was "submitted to me by Mr. Wm. Clapp, M. H. A., who shot it near Quidi Vidi." Mr. Howley thinks it "almost impossible that this bird could have come direct across the Atlantic from its European home" and he is "inclined to believe it may have been up somewhere in Greenland or Iceland," and "been driven westward by the prevalence of strong gales of easterly and northeast winds." — WILLIAM BREWSTER, *Cambridge, Mass.*

The Black Vulture again in Eastern Massachusetts.— On the 15th of last September, 1905, I shot a Black Vulture (*Catharista atrata*) at Waltham, Mass. This is, I believe, the fifth specimen on record in Massachusetts. When first seen, at dusk, the vulture was sitting on the top of a tall dead pine tree, on the edge of some woods, about two miles north of the town. At a distance it looked somewhat like a large crow, but much more awkward; its neck seemed to be sunk forward till it stretched out between the wings. I started toward the vulture, keeping as much out of sight as possible, but it must have seen me, for it raised its head, and then flew in my direction, with long, steady flaps of its wings, and evidently more curious than frightened, for it flew close to the tree tops, and directly over my head. When the shot struck the bird, it fell heavily to the ground, but immediately spreading both wings, as if to balance itself, it ran awkwardly off through the bushes, until shot again. Although full grown, it was evidently not an old bird; the plumage was in fine condition, but had a very disagreeable odor. The outstretched wings measured fifty-eight inches from tip to tip. The specimen, mounted, is now in my collection.— J. H. Storer, Jr., *Groton, Mass.*

Exceptional Eggs of the Bald Eagle (*Haliæëtus leucocephalus*).— On April 7, 1891, I took a set of two eggs from a Bald Eagle's nest in a tall dead pine (since fallen) in Lincoln Co., Maine. On April 16, 1892, I took a set of three eggs from the same nest. Incubation had begun in the set of two and was about one third completed in the set of three. Is it possible that there was any connection between the loss of the birds' eggs in 1891 and their laying three in 1892? The nest was lined with *green* pine boughs. When I found the nest I went very close to the tree without seeing any bird, and it was not until I fired my gun over the nest that the female flew off. I did not see her again until I was half way up the tree, when both birds appeared on the scene, though at no time did they come very near me.

The eggs of the first set measure: — 3.20 × 2.27 and 3.04 × 2.21 in. Second set: — 3.02 × 2.31, 3.03 × 2.20, 2.95 × 2.19. Average for the five eggs: — 3.05 × 2.24.— B. G. Willard, *Millis, Mass.*

Richardson's Owl in Eastern Massachusetts.— A Richardson's Owl (*Nyctala tengmalmi richardsoni*), female, was shot at Hyde Park, Mass., near the railroad tracks, towards the Clarendon Hills station by Frederic Downey, November 26, 1905. It was skinned by Mr. Frank Blake Webster, of whom I purchased it. It is now in my museum.— John E. Thayer, *Lancaster, Mass.*

Great Gray Owl (*Scotiaptex cinerea*) **in Minnesota.**— Mr. Henry W. Howling, taxidermist, Minneapolis, Minn., has recently informed me that during the present season he has received eight specimens of this species for mounting. He states that this number is more than he has

received in any previous season. The dates and localities are as follows:

Anoka, Anoka Co., Minn., Nov. 21, 1905.

St. Paul, Ramsey Co., Minn., Dec. 11, 1905.

International Falls, Itaska Co., Minn., Dec. 18, 1905.

Duluth, St. Louis Co., Minn., Jan. 3, 1906.

Lake Minnetonka, Hennepin Co., Minn., Jan. 22, 1906.

New Brighton, Anoka Co., Minn., Jan. 24, 1906.

Laddie's Lake, Anoka Co., Minn., Jan. 29, 1906.

Fort Snelling, Hennepin Co., Minn., Feb. 21, 1906.

Dr. P. L. Hatch in his 'Notes on the Birds of Minnesota," 1892, writes that since 1874 he had seen very few specimens of this owl in the hands of sportsmen and taxidermists.— RUTHVEN DEANE, *Chicago Ill.*

Eggs and Nests of the Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*). — My collector, Mr. Wilmot W. Brown, found several sets of eggs of the Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*) while collecting in Chihuahua. As these are among the first, if not the first eggs of this bird, that have been found it may be interesting to record them.

The following are his notes: —

No. 2. Colonia Pachaco, Chihuahua, Aug. 11, 1905. I found the eggs in a deserted nest of an Imperial Woodpecker in a high dead pine about eighty feet from the ground. There were two eggs in the hole on the bare wood. The hole was two feet deep and about eight inches across — the entrance was six inches in diameter. The tree was about one hundred feet high and was thirty-six inches in diameter at the base and was so dry that the bark had all peeled off. It was very difficult to climb, not to mention the danger. I took both parent birds. The tree was located on a flat-topped mountain at an altitude of 7500 feet above the sea. The measurements of these eggs are as follows: 1.64 × 1.20, 1.59 × 1.20 inches.

No. 3. Near Pachaco, Chihuahua, Aug. 14, 1905. Nest about sixty feet from the ground in a dead pine tree. Hole about two feet deep and eight inches across. Sawdust like material in bottom of hole on which the eggs rested. Eggs two, quite fresh. Altitude, 7000 feet. Measurements, 1.54 × 1.22, 1.51 × 1.19.

No. 4. Near Pachaco, Chihuahua, Aug. 15, 1905. Nest in a dry dead pine tree about seventy feet from ground. Hole seven inches in diameter at entrance and nine inches across inside, and about eighteen inches deep. The nest contained one egg in an advanced state of incubation—about ready to hatch. It rested on sawdust like material. Altitude, 7000 feet. Measurements, 1.52 × 1.15.

No. 5. Colonia Pachaco, Chihuahua, Aug. 17, 1905. Nest in a dry dead pine tree about sixty feet from ground. It contained one young one and one egg about ready to hatch. The hole was two feet deep, eight inches wide inside, and the entrance was nearly round and about six inches across. Altitude about 6500 feet. Measurements, 1.49 × 1.22.

No. 6. Near Colonia Garcia, Chihuahua, Aug. 20, 1905. Nest in a live, long-leafed pine tree about seventy-five feet from the ground. This tree had been hit by lightning on the north side leaving a dead streak and in this the hole had been made. The hole was about two feet deep and nine inches across inside. The entrance was circular in shape. The bottom of the hole contained the usual sawdust like material. The nest contained two *big* young ones and one *fresh* egg. Altitude, 7500 feet. Measurements, 1.48 × 1.18.

No. 7. Near Colonia Garcia, Chihuahua, Aug. 22, 1905. One *fresh* egg and two big young ones. Nest in a dry dead pine about fifty feet from ground; a few feathers and the usual sawdust like material in bottom of hole. Hole at entrance about six inches across and circular in shape. Depth about the same as others. Altitude, 7000 feet. Measurements, 1.60 × 1.21.

No. 8. Near Colonia Garcia, Chihuahua, Aug. 24, 1905. Nest in a rotten pine tree about fifty feet from the ground. Hole about nine inches across inside and two feet deep. Entrance six inches across and circular in shape. A few feathers and the usual sawdust like material in bottom of hole. Parrot flew at me when I was taking the eggs. One egg quite fresh, the other advanced in incubation. Tree about seventy-five feet high. Measurements, 1.51 × 1.21, 1.50 × 1.16.

No. 9. Near Colonia Garcia, Chihuahua, Aug. 25, 1905. Nest in an old rotten pine about fifty feet from ground. Hole about ten inches across inside and about twenty-eight inches deep, with the usual sawdust like deposit at the bottom. Both eggs advanced in incubation. The female was very tame, allowing me to get quite close to her. Measurements, 1.54 × 1.23, 1.53 × 1.22.

No. 10. Near Colonia Garcia, Chihuahua, Aug. 28, 1905. Two young ones[1] taken from nest in high dry pine fifty feet from the ground. Hole eight inches across inside and about two feet deep; entrance about six inches in diameter. The remains of two eggs were found. The female remained in the tree until I got quite close to the nest. Young ones in alcohol.

Remarks: One to three eggs seems to constitute a set. They are in color a glossy white. The shell is very thick for the size of the egg.

The average measurement of the twelve eggs taken by Mr. Brown is 1.53 × 1.19 inches. — JOHN E. THAYER, *Lancaster, Mass.*

Chætura vauxi: A Correction.— The name now stands in the A. O. U. Check-List, 2d Edition, "*Chætura vauxii* (Towns.)," and the authority is given as "*Cypselus vauxii* Towns., Journ. Ac. Nat. Sci. Phila., VIII. 1839, 148."

Townsend did describe the species in the connection cited, and expected

[1] These young ones are in my collection, also a section of the tree where the nest was.

it to be the original publication, but before the Academy paper got into print his 'Narrative' appeared. In the appendix to this 'Narrative,' many of Townsend's original descriptions appear, and among them that of "*Cypcelus vauxi.*" That the publication of the Narrative was really prior to that of the Journal of the Academy of Natural Sciences of Philadelphia, Vol. VIII, is evidenced by page 159 of the latter volume where Townsend himself says (in speaking of "*Sylvia tolmœi*"): "I ventured to insert a description of this bird in an appendix to my recently published work, 'Narrative, etc.'"

No. 424 of the Check-List should therefore stand: *Chætura vauxi* (Towns.), and the authority: *Cypcelus vauxi* Towns., Narrative, 1839, 348.

The authority as now given in the Check-List is further incorrect in that it cites "*Cypselus vauxii,*" where "*Cypcelus vauxii*" appeared.— W. Leon Dawson, *Seattle, Wash.*

The Eastern Distribution of the Prairie Horned Lark: A Question of Evidence. — In view of the data we possess to-day such a question would seem irrelevant, were it not a fact that recent works of importance reiterate the old dogma that this bird of the western prairies is rapidly pushing its way eastward.

It is true that our knowledge of its distribution has been worked out from West to East in a "back-handed fashion," as has been well shown by various data, and by several tabulations, part of which have aimed to prove the foregoing assumption.

First named in 1884 by Mr. H. W. Henshaw from a type selected from Illinois specimens, it has been rather slowly identified until we now have a fair knowledge of its distribution.

It is especially noticeable that as soon as attention was called to it, it appeared in various quarters where it had been confounded with its larger eastern relative, *Otocoris alpestris*, and had actually been collected on the Massachusetts coast a year before it was distinguished as a well marked race. Yet its history began much earlier. In 1833 Audubon discovered it at Bras d'Or, Labrador, and about a year later figured it in the 'Birds of America,' II, pl. CC, fl., and in the second volume of the 'Ornithological Biography' (1834), page 575, he described it as the nuptial plumage of the Common Horned Lark.

Another early record of it is to be found in Maynard's 'Naturalist's Guide,' where in 1870 it was published as having been seen in July, 1869, in Eastern Massachusetts. This record is re-cited in Coues, 'Birds of the Northwest' (p. 38, 1874).

The working out of its distribution in Maine (where it is the first migrant to appear in spring, and one of the first birds to breed), is certainly the result, in no small measure, of anticipation and careful search, and in no less measure, to opportunity, and it seems very probable that the same

is true of the greater part of its somewhat recently discovered range. In addition to the foregoing evidence, the rediscovery of the bird in Labrador in 1891 by the Bowdoin College expedition (Proc. Portland Soc. Nat. Hist., II, p. 153); after a lapse of fifty-eight years, shows conclusively that it has not suddenly extended its range eastwardly.— ARTHUR H. NORTON, *Mus. Nat. Hist., Portland, Me.*

The Seaside Sparrow Nesting in Bushes.— While I am unable to say positively that the Seaside Sparrow breeding here never nests on the ground, the few nests I have seen have all been in bushes and trees from two to six feet up. This bird is so rare here during the breeding season, and the few skins taken then are in such badly worn plumage, it is impossible to say positively what they are, but I am quite sure they are *Ammodramus maritimus macgillivrayi*.

The first nest I saw that I am positive about was found on a small island on the river bank in a salt marsh east of St. Marys, the first part of June, 1904. This island is covered with a growth of sea myrtle bushes and small cedar trees. The nest was in one of the sea myrtle bushes, about three feet from ground, was rather loosely made of dry marsh grasses, and contained three eggs. The bird was incubating at the time and I had a good look at her. A few days after this the nest and eggs were destroyed by negro boys.

A few days later the birds (I presume the same pair) built another nest about thirty feet from the first, this time out on a cedar limb about six feet from the ground. On June 21, 1904, I first killed the two birds and then took the nest with the set of two eggs, and have them all now in my collection. Incubation was well under way.

The only other nest I have been able to find was an old one, possibly of the season before. It was also in sea myrtle bushes, about two feet from ground. I have looked for nests in many other marshes here but all in vain. In 1905 I did not even see a bird during the breeding season.— ISAAC F. ARNOW, *St. Marys, Ga.*

Occurrence of Progne chalybea in Texas.— In the George B. Sennett collection, recently acquired by this Museum, are two specimens of *Progne* from southern Texas which have hitherto passed as *P. subis*. Reidentification of these birds proves them to be *Progne chalybea*, the Gray-breasted Martin. This species has previously been recorded from Victoria, Tamaulipas, and Sabinas, Coahuila, in eastern Mexico, but never before from as far north as the adjoining State of Texas. The two localities given below are on the north side of the lower Rio Grande. The data are as follows: No. 84806, Am. Mus. Nat. Hist., ♂; Rio Grande City, Texas, April 25, 1880; M. A. Frazar. No. 84808, Am. Mus. Nat. Hist., ♀; Hidalgo, Texas, May 18, 1889; J. A. Singley.

Judging by these records the Gray-breasted Martin is probably of regular occurrence in the lower Rio Grande Valley. Its close resemblance to

the females and young males of *P. subis* is doubtless responsible for its having been so long overlooked.

It may be well to note that there is also in the collection an immature male *P. subis* taken at the same time and place and by the same collector as the female *chalybea*.— W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Swainson's Warbler in Nebraska.— Among a lot of bird skins from Kearney, Nebraska, sent to me for identification a few days ago, I found a fine adult specimen of Swainson's Warbler (*Helinaia swainsonii*), labeled "♂ Kearney, Neb., Apr. 9, 1905. C. A. Black." I at once wrote my friend Mr. Black, for any particulars regarding its capture, and he replied as follows: "The [Swainson's] Warbler was taken by myself, on a cloudy afternoon in my dooryard. It was hopping around on the ground under some cedar and maple trees." This I believe to be the first record of this species being taken in Nebraska, and I believe it is farther north and west than it has ever been recorded before.— CHAS. K. WORTHEN, *Warsaw, Ills.*

The Date of Discovery of Swainson's Warbler (*Helinaia swainsonii*). — In Audubon's 'Birds of America,' Vol. II, p. 84, he states concerning this species: "The bird represented in the plate before you was discovered by my friend John Bachman, near Charleston in South Carolina, while I was in another part of our continent, searching for the knowledge necessary to render my ornithological biographies as interesting as possible to you: — it was in the spring of 1832, when I was rambling over the rugged country of Labrador, that my southern friend found the first specimen of this bird, near the banks of the Edista river."

In referring to Bachman's Warbler (*Helminthophila bachmani*), Vol. II, p. 93, Audubon says: "The first obtained was found by him [Bachman] a few miles from Charleston, in South Carolina, in July 1833, while I was rambling over the crags of Labrador."

As Audubon unquestionably visited Labrador in 1833, it will be clearly seen that Swainson's Warbler was taken the same year, and *not* in 1832 as stated by him. Dr. Bachman therefore discovered two Warblers new to science in 1833, which were afterwards lost to science for more than half a century.— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Maryland Yellowthroat and Bachman's Finch near Camden, South Carolina, in Winter.— On January 8, 1906, I took a male Maryland Yellowthroat (*Geothlypis trichas*) in a little patch of briars and reeds at the side of a road, not far from a small swamp, near Camden, Kershaw County, South Carolina. The bird attracted my attention by frequently uttering its familiar call note. I will not in the field express an opinion upon its varietal status. It has been sent to the United States National Museum where it will no doubt be permanently in evidence.[1] This is the

[1] Since writing the above Mr. Ridgway has informed me that the specimen is 'a typical example of *G. t. ignota*."

only Maryland Yellowthroat I have found near Camden during three winters of field work there. In 1904 the first of the season was seen on March 14. In 1905 the first was seen on March 20.

On January 25, 1906, I flushed a male Bachman's Finch (*Peucæa æstivalis bachmanii*) in a small grassy field, about thirty yards from a mixed wood of pine and oak, near Camden, and secured it. This also is the first winter example of its kind which I have found near Camden, and it has also been sent to the United States National Museum. On February 23, 1906, I secured another male specimen in a briar thicket bordering a ditch in an open field, my attention having been attracted to it by its call note. It is possible that this February bird should be considered a spring arrival, since spring begins in South Carolina in February.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Proper Generic Name for the Nightingale.— Since the propriety of our change of the generic name of the Nightingale from *Aëdon* to *Luscinia* (Proc. U. S. Nat. Mus. XXVIII, 1905, p. 895) has been recently questioned (Sclater, Bull. Brit. Ornith. Club, XVI, December, 1905, pp. 39–41), it may be well to set forth in more detail than before was thought necessary the reason for this action. The generic names *Aëdon* Forster (Synopt. Cat. Brit. Birds, 1817, p. 53) and *Luscinia* Forster (*ibid.*, p. 14) are of identical applicability, both being without diagnosis, and having for type the same species — *Luscinia megarhynchos* Brehm. As *Luscinia* occurs thus some 39 pages anterior to *Aëdon* it should be adopted. Whether or not Forster intended to credit the name *Luscinia* to Leach makes no difference at all in the necessity for its acceptance, provided it is a valid name, that it is the earliest name for the genus, and that this 'Catalogue' is its first place of publication. Forster, however, did intend it for a new name of his own, as may easily be seen by a careful examination of his introduction and text. In the former he makes the following remarks, italics ours: "That [arrangement] of Latham, and others, founded on the Linnæan system, seems preferable, if we consider the infinite approximations of the genera to each other; and the wholly artificial nature of generic arrangement: while the catalogue of Dr. Leach is certainly more conformable to the differences of the character of Birds, and also to the notions of the Antients. In those few instances where he has appeared to me to have mistaken the old name, *I have ventured to substitute one* which I believe to belong antiently to the bird. So that in the following Catalogue, the large capitals will designate the Linnæan name according to the arrangement now adopted. The small Roman letter will mark the names of the old writers brought to light by Dr. Leach. *Where I have altered them, I have put a ?.*"

The Nightingale is introduced into the succeeding Catalogue (page 14) as follows:

101 SYLVIA LVSCINIA. Luscinia Aedon?
Nightingale, Le Rosignol, Nachtigall, *or Philomela.*

The mark of interrogation clearly indicates, therefore, Forster's intention to propose *Luscinia aedon* as a new name for the *Sylvia luscinia* of Latham, and *Luscinia* as a generic term consequently must date from this place.

The generic name *Philomela* Link (Beschr. Natur. Samml. Univers. Rostock, I, 1806, p. 31) which Doctor Sclater (*loc. cit.*, p. 40) has proposed to use for the nightingale is merely a substitute for the *Sylvia* of Bechstein and therefore identical in application, whatever species may have been included. Its author gives this reason for its introduction: "Ich habe den unbequemen Namen Sylvia, welchen Bechstein dieser Gattung gegeben, in Philomela verwandelt." The species that Link enumerates under *Philomela* indicate that he had in mind the group called *Sylvia* by Bechstein in the latter's 'Ornithologisches Taschenbuch von und für Deutschland,' 1803, pp. 165–191, which name he apparently thought originated with Bechstein; and consequently the type of *Philomela* Link must be ascertained by determining the type of *Sylvia* Bechstein. Bechstein (*loc. cit.*) divides his heterogeneous group *Sylvia* into three sections, for the first two of which he gives new subgeneric names, leaving the last one as typical *Sylvia*, from which, of course, the type of the whole genus must be selected. These divisions are:

a. Grasmücken (*Curruca*) [p. 165].
b. Laubvögel (*Asilus*) [p. 173].
c. Wurmfresser [p. 177].

The first (*Curruca*) includes the nightingale, but by tautonomy has for its type *Motacilla curruca* Linnæus, from which Bechstein evidently took the name; the type of the second (*Asilus*) is commonly considered to be *Motacilla sibillatrix* Bechstein; and of the third, or typical *Sylvia* (Bechstein), the first species, *Motacilla rubecula* Linnæus, may be fixed as the type. By this arrangement *Motacilla rubecula* Linnæus becomes the type of *Philomela* Link which therefore falls as a synonym of the prior *Erithacus* Cuvier (Leç. Anat. Comp., I, 1800, tab. ii) based on the same species. Since this disposes of the generic name *Philomela*, in so far at least as the nightingale is concerned, the latter must be called *Luscinia* as above shown. — Harry C. Oberholser, *Washington, D. C.*

Winter Record for the Robin in Hanover, N. H.— January 24, 1906, following a week's thaw and exceptionally warm weather for the season, two Robins (*Merula migratoria*) appeared in the trees about the college campus. Both seemed to be males, one of them uttering a few song notes. They were not seen again. The presence of Robins in this region in winter is so unusual that their occurrence is worthy of record.— Francis G. Blake, *Hanover, N. H.*

Questionable Records.— In 'The Auk' for October, 1905, pages 410 and 419, Mr. Arthur T. Wayne published records of two birds from south-

ern California which I believe to be erroneous. As recorded these were "The California Partridge (*Callipepla californica*)," and "The Black-fronted Warbler (*Dendroica auduboni nigrifrons*)," each based on a single specimen from Los Angeles County. As Mr. Wayne definitely stated, these were of Mr. Harry S. Swarth's collecting. Since the locality in both instances was far out of the normal range, and knowing the painstaking care with which Mr. Swarth had worked over his material (I could not believe that Mr. Swarth would let such things slip through his hands unnoticed), I will confess that my suspicions were distinctly aroused. So I at once wrote to Mr. Wayne asking for the privilege of examining the skins in question in order to make sure in my own mind of the determinations. That was in October. February 23, 1906, after I had been so importunate as to write a third time, I received a blunt reply ending with the statement: "The specimens that I recorded in the Oct. Auk need no verification as I believe I know as much about these birds as you do." (!) Meanwhile I had written to Mr. Swarth, and obtained the following information:

"The bird he [Wayne] records [as the 'California' Partridge] was shot on the first day of the open season, when three of us made a pretty big bag. I put up four males, the pick of about forty, if I remember rightly. It is probably an adult bird, two years old or more; sometimes there is an appreciable difference between such and a bird of the year. Anyway I don't believe it is anything but *vallicola*, born and raised in the San Fernando Valley." Let me call attention to the fact that *californica* is a race belonging to the humid coast belt of California from Monterey, or possibly San Luis Obispo, County northward, and that the vast numbers of quail examined from Los Angeles County by various ornithologists have all been *vallicola*. This quail is not possibly migratory to the extent of 200 miles. It seems to me that here is another instance of an extreme of individual variation in one race being seized upon and labelled as an example of some remotely indigenous subspecies.

Mr. Swarth writes me further: "As to the 'Black-fronted' Warbler, I sent him [Wayne] a number of male *Audubons*, the highest colored ones I could get, and of these he kept the *very finest* and returned the others. . . . In my note-book the measurements of his '*nigrifrons*' are down as 'length, 5.75; extent of wings, 9.37.' You can see how this compares with my Arizona specimens." I would refer Mr. Wayne to Swarth's comparison of *auduboni* and *nigrifrons*, as regards plumages and measurements, as detailed so carefully in 'Pacific Coast Avifauna,' No. 4, pages 54 and 55, and then ask if it be probable that Mr. Swarth would make such a 'break' as to label a skin of *nigrifrons*, *auduboni*. It seems to me again a case of an extraordinarily richly-colored plumage, and an unwarranted jump at conclusions.

Although I have not had the opportunity of seeing the specimens in question, I think the above evidence supports my surmise that Mr. Wayne's "*Callipepla californica*" is only an example of the ordinary *Lophortyx californica vallicola*, and that his "*Dendroica auduboni nigrifrons*" is no more than *Dendroica auduboni auduboni*, the common form of the region.

Let me emphasize that I mean no implication other than an error of judgment. We all make mistakes. I am guilty of having launched some worse ones than the above, as elsewhere acknowledged. We must all work to clarify our horde of published records, if we want to make them of service in our study of geographic distribution and variation, if our conclusions are to be sound. It is very easy to put a mistake into print, but pitiably difficult to suppress it, as many of us know who have traced quoted errors through decades of literature.— JOSEPH GRINNELL, *Pasadena, California.*

The American Scoter, Limpkin, and Ipswich Sparrow in South Carolina.— In the A. O. U. Check-List for 1895, the range of the American Scoter (*Oidemia americana*) is given as "south in winter to New Jersey, the Great Lakes, Colorado and California." Dr. Eugene Edmund Murphey has given me permission to announce the capture of a male of this species which he secured on May 7, 1903, in Bulls Bay. The specimen is in very worn plumage, so much so that many of the primaries and rectrices are skeletonized, which shows that it undoubtedly wintered here. This record makes the first for South Carolina, and according to the A. O. U. List, the first for the Atlantic coast south of New Jersey. This specimen is now in my collection.

I am also indebted to Dr. Murphey for the privilege of recording the capture of two Limpkins (*Aramus giganteus*) that were taken at Twiggs Dead River, Aiken County, South Carolina. One of them, an adult male was taken by Mr. W. H. Twiggs, October 18, 1890, and preserved by Mr. George P. Butler, of Augusta, Georgia. This specimen is now in my collection. The negroes on the plantation told Mr. Twiggs that there had been a pair of the birds, but that they had killed and eaten one a few days before. This record is a very important one, as the Limpkin has not been taken before in any part of the United States except in Florida. In 1894, I found this species breeding abundantly on the Wacissa River, Florida, which brought its range to within eighteen miles of the Georgia line. (See 'The Auk,' October, 1895, p. 366.)

On December 26, 1905, I secured a fine specimen of the Ipswich Sparrow (*Passerculus princeps*) on Long Island, South Carolina, and on January 2, 1906, I shot another on the same island. Both specimens were moulting the feathers about the pileum and auriculars. As these were the first specimens I had ever seen in their natural environment, I determined to explore Bulls Island, which is covered along almost the entire length (ten miles) with wild oats (*Zizania miliacea*), which is well adapted to the wants of this bird. On January 8, 1906, I hunted the island most thoroughly, but among the hundreds of Savanna Sparrows (*Passerculus sandwichensis savanna*) that were everywhere I could not detect a single *princeps* among them. Upon exploring a bleak and isolated spot fronting the beach (where the Savanna Sparrow was absent) I saw three *princeps* together and succeeded in securing two of them that day — the other being so

very wild that it was lost among the sand hills. In order to satisfy myself that the bird I failed to get would remain, I made another visit on February 9, to the island, and after searching for more than three hours I succeeded in flushing and finally securing it. All the specimens taken are females. The winter of 1906 has been the mildest since the winter of 1889–90, and the presence of these birds on this coast is not due to a rigorous season, but to the absence of the food supply. For previous records of the capture of this species in South Carolina by the writer, see 'The Auk,' April, 1902, p. 203.— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Tagging Migrants.— In accordance with the scheme outlined in 'The Auk,' XXI, p. 410, I have been placing aluminum tags upon the tarsus of nestling birds, and have induced others to follow my example in the work. This past spring several field workers have been using tags supplied by me and this winter the first result has been attained.

May 29 Mr. Chas. Kirkpatrick of Keota, Keokuck Co., Iowa, tagged a nest of half grown Flickers (*Colaptes auratus*) near his home. Dec. 25 Mr. J. E. Ross took No. 123 of this series at Many, Sabine Co., Louisiana. The bird was not saved but I secured the tag from the collector and have identified it as one of my issue.

This single success shows what might be expected if the work was more generally prosecuted by ornithologists in the field. The amount of labor it entails to bend bands around the legs of a brood of nestlings is insignificant in comparison with the value of the results that may be achieved if but a very small percentage of the so marked birds ever turn up again. Many of the problems of ornithology can be solved only by some such line of work. Exact data on the age of different plumages, length of life of birds, individual routes of migration and the distances traveled by individuals, are but some of the problems that must be so attacked. To avoid confusion of having several series of tags in use at once it is advisable for one person to issue them,[1] only stipulating that, at the end of the season, a list of the tags so used, the species thus marked, and the date and place, be furnished me to be kept as a matter of record, and to have the benefit of two records to guard against loss of notes through accident.— P. A. TAVERNER, *165 Oakland Ave., Detroit, Mich.*

Notes from Hancock County, Mississippi.— On January 1, 1902, a specimen of Sprague's Pipit (*Anthus spraguei*) was taken by W. B. Allison and the writer, in a low meadow cleared from the pine woods near Bay St. Louis. It was in fine plumage and good condition. Another was seen in the same place on February 11, 1902. These two are the only Mississippi records.

[1] The tags are inexpensive and I will gladly distribute them to those desirous of carrying on the work.

In my note-book I find this entry under date of Apr. 8, 1902: "....I observed an interesting thing in connection with another Waxwing, separate from this flock. On a bare branch, a few yards away, in a little swampy bottom, I noticed an attenuated object, perfectly motionless, that soon took the colors, but not the shape, of a Cedarbird. It was so very thin and elongated that I thought either that it was the dried body of a bird that had hung there for weeks, or that a particularly murderous Shrike had impaled it by the neck, and the stretching had resulted from that. But as I came very close, and got a side view, I saw that the bird was alive, but was adopting the ruse described by Chapman, in his book on bird photography, as being employed by *Ardetta exilis*. The neck was stretched straight up, the bill nearly vertical, the crest depressed; and the general appearance of the bird made it obvious that it was trying, by straightening and greatly attenuating its body, to simulate as closely as possible a dead branch. When I was about five feet away, it fluttered off with some difficulty, evidently wounded." — ANDREW ALLISON, *Ellisville, Miss.*

RECENT LITERATURE.

Ridgway on the American Families of Oligomyodian Passeres.[1] —In a paper of ten pages Mr. Ridgway reviews the taxonomic history of these groups, and gives a 'Provisional Key to the Families of Mesomyodi,' followed by a revision of the families Tyrannidæ, Pipridæ, and Cotingidæ, with the result that a dozen genera heretofore commonly placed in Tyrannidæ are now either actually removed to other families, or their closer alliance to other families is suggested. Several, as *Sirystes*, *Hylonax*, *Elainopsis*, *Tyrannulus* and *Ornithion*, are transferred to the Cotingidæ, four or five others are thought to have Formicarian affinities, and one, *Lawrencia*, is thought to agree essentially with the Vireonidæ. As the internal structure of very few of the Mesomyodian forms is known, the arrangement here proposed is necessarily tentative, being based mainly on external characters.— J. A. A.

[1] Some Observations concerning the American Families of Oligomyodian Passeres. By Robert Ridgway. Proc. Biol. Soc. Washington, Vol. XIX, pp. 7–16, Jan. 29, 1906.

Stone and Rhoads on Birds from Northeastern Lower California.[1] — A trip to the mouth of the Colorado River, made by Mr. Samuel N. Rhoads in the early part of the year 1905, in the interest of the Academy of Natural Sciences of Philadelphia, resulted in the acquisition of considerable collections of mammals and birds, which are here reported upon by Mr. Witmer Stone. The birds numbered 258 specimens, representing about 50 species. These are listed, with their localities and a transcript of Mr. Rhoads's field notes. A second annotated list of 58 species that were observed, but not collected, completes this welcome addition to our knowledge of the little known ornis of the delta region of the Rio Colorado. — J. A. A.

Thayer and Bangs on Birds from Panama. — Two papers (Nos. 2 and 3) have recently appeared relating to the results of the John E. Thayer Expedition of 1904. The first[2] relates to the mammals and birds of the Pearl Islands, Bay of Panama, collected by Mr. W. W. Brown on a second visit to these islands in March and April, 1904. Previous to Mr. Brown's first visit to these islands, in 1900, little was known of their natural history. "On his first trip to the Pearl Islands Mr. Brown secured examples of forty-two species of birds, only two of which were North American migrants. On the present expedition he took representatives of ninety-two species.... Thus the number of species of birds so far taken in the Pearl Islands is ninety-four, of which thirty-three are North American migrants, and sixty-one resident breeding birds of the islands." Of the 33 North American migrants 24 are passerine species and 9 are sandpipers and plovers.

Respecting a number of the species and subspecies there is much pertinent comment respecting their status and relationships. Of special interest are the remarks on the *Butorides virescens* group. The Pearl Island examples are found to be inseparable from the West-Indian *B. v. maculata* (Bodd.), of which the *B. v. brunnescens* of authors appears to be merely an inconstant color phase, both forms occurring in the Pearl Islands, and between which, in the Pearl Island series "there is every stage of intermediate coloring." It is further said: "After examining a very large amount of material in this connection, we are forced to place very little reliance on color as a character by which to distinguish the various species. Seasonal difference in this respect is very great, individual variation is also great, and in arid regions the bird bleaches out very fast.... The subspecies *maculata* also has a rufous phase — the so-called *B. brunnescens* — which thus far has been recorded from Cuba and the

[1] On a Collection of Birds and Mammals from the Colorado Delta, Lower California. By Witmer Stone. With Field Notes by Samuel N. Rhoads. Proc. Acad. Nat. Sci. Philadelphia, Sept., 1905, pp. 676 690. Dec. 6, 1905.

[2] The Mammals and Birds of the Pearl Islands, Bay of Panama. By John E. Thayer and Outram Bangs. Bull. Mus. Comp. Zool., Vol. XLVI, No. 8, pp. 137–160. Sept., 1905. Birds, pp. 140 160.

Pearl Islands only. That this is merely a phase of plumage is abundantly shown by the Pearl Island series [21 specimens]." It is also suggested that *B. v. anthonyi* will prove to be merely a synonym of *B. v. frazari*.

Two subspecies are described as new, and one previously described by Mr. Bangs has been found, in the light of new material, to be untenable.

The second paper relates to the vertebrata of the Savanna of Panama,[1] — a grassy plain near the city of Panama, where Mr. Brown collected during the greater part of May, 1904, obtaining, in addition to collections of mammals, reptiles, amphibians, and fishes, 86 species of birds, of which three are described as new. The only North American migrant among them was the Alder Flycatcher (*Empidonax traillii alnorum*).

In other recent papers Mr. Bangs discusses[2] the status of *Icterus gaulanensis* Underwood, and arrives at the conclusion that it is "an example of *I. giraudii* perfectly typical in every respect except in having the black of the head extending somewhat farther back" than is usual. He also cites several species of *Ramphocelus*, each resting on a single peculiar individual, which he considers as other instances of a similar kind,— species resting merely on 'freaks' or hybrids. He, on the other hand, considers,[3] contrary to Mr. Ridgway's conclusion, that the Panama Green Honey Creeper is entitled to recognition as a subspecies (*Chlorophanes spiza exsul*), ranging from northern and western Ecuador through Panama to Chiriqui, and as distinguishable from the more northern *C. s. guatemalensis* by smaller size and shorter bill.— J. A. A.

Stone on a Collection of Birds from British East Africa.[4] — This collection was made by Mr. George L. Harrison, Jr., on a journey through Central East Africa, May 16 to November 4, 1904, and numbers 212 species, including one new to science. The annotations give the localities and dates of collecting, and the color of the irides, bill, etc., taken from the freshly killed specimens. The classification is that of Dr. Sharpe's 'Hand-List of Birds.'— J. A. A.

McGregor on Philippine Birds.— Publication No. 34 of the Bureau of Government Laboratories, Philippine Islands, contains two papers[5]

[1] Vertebrata from the Savanna of Panama, *Ibid.*, No. 12, pp. 211–230. January, 1906. Birds, by John E. Thayer and Outram Bangs, pp. 213–224.

[2] What is *Icterus gualanensis* Underwood? By Outram Bangs. Proc. Biol. Soc. Wash., XVIII, pp. 167–170, June 29, 1905.

[3] The Name of the Panama Green Honey Creeper. By Outram Bangs. *Ibid.*, p. 186, June 29, 1905.

[4] On a Collection of Birds from British East Africa obtained by Mr. George L. Harrison, Jr. By Witmer Stone. Proc. Acad. Nat. Sci. Philadelphia, Nov., 1905, pp. 755–782. Jan. 24, 1906.

[5] I. Birds from Mindoro and small adjacent Islands; II. Notes on three rare Luzon Birds. By Richard C. McGregor. [Publication] No. 34. Bureau of Government Laboratories, Department of the Interior. 8vo, pp. 32, with 13 half-tone plates. October, 1905.

by Mr. Richard C. McGregor, the first being an annotated list of about 110 species of birds observed or collected along the Baco River in the northern part of Mindoro, during March, April, and May, 1905. Two species (*Chætura dubia*, *Edoliisoma elusum*) are described as new, and there are extended notes on the nesting habits of quite a number of others. There are also nominal lists of birds noted on three outlying islands (Maestre de Campo, 20 species; Semerara, 34 species, one, *Chibia worcesteri*, new; Libay, 19 species). The second paper records three rare species from Luzon, including a specimen of *Botaurus stellaris*, apparently its first record for the Philippines. The eighteen half-tone plates give a number of views of nesting sites, and of six species of birds, from skins.— J. A. A.

Riley on New American Birds.— In recent papers Mr. Riley has described a new Ground Dove [1] from Mona Island, Porto Rico, as *Columbigallina passerina exigua*, and three new birds from the Merida region of Venezuela.[2] These are *Leptasthenura montivagans*, closely related to *L. andicola* Scl.; *Haplospiza montosa*, near *H. nivaria* Bangs; and *Pheuticus uropygialis meridensis*. He has also pointed out [3] that *Turdus montanus* Lafr. is preoccupied and must be replaced by *Turdus apicalis* Hartl., the 'correct name' becoming thus *Allenia apicalis* (Hartl.), instead of *A. albiventris* (Lawr.), as Mr. Riley had previously announced.— J. A. A.

Verrill on the Birds of Dominica.[4]— This privately printed brochure of nineteen leaves, without pagination, date, or place of publication, consists of three parts, and is based on the author's observations and collections made during his residence on the island from January 1, 1904, to August 1, 1905. The author states that no species is included in his list of which he did not obtain specimens, or observe under such conditions that their identification was positive. Part I is an annotated list of 72 species previously unrecorded from the island, giving notes on their relative abundance, localities of occurrence on the island, habits, etc. Part II contains an annotated list of 16 species previously recorded from Dominica, followed by a nominal list of all the species known to occur on the island,

[1] A New Subspecies of Ground Dove from Mona Island, Porto Rico. By J. H. Riley, Aid, Division of Birds, U. S. National Museum. Proc. U. S. Nat. Mus., Vol. XXIX, pp. 171, 172.

[2] Descriptions of three New Birds from the Merida Region of Venezuela. By J. H. Riley. Proc. Biol. Soc. Washington, Vol. XVIII, pp. 219–222. Oct. 17, 1905.

[3] On the Correct Name for the Mountain Thrush of the Lesser Antilles. By J. H. Riley. *Ibid.*, p. 185. June 29, 1905.

[4] 'Addition to the Avifauna of Dominica. ' Notes on Species hitherto unrecorded with | Descriptions of three New Species and a List of all birds known to occur | on the Island. | By A. Hyatt Verrill. - 8vo, ll. 19. Privately printed, without pagination, date, or place of publication. (The present copy was received Oct. 24, 1905.)

135 in number. Then follows, as a sort of supplement or third part, descriptions of a new species of hummingbird (*Thalurania belli*), a new hawk (*Buteo latissimus rivieri*), and a new subspecies of the American Redstart (*Setophaga ruticilla tropica*). The hummingbird is said to be restricted "to the higher mountains of Dominica at an elevation of more than 2000 feet above the sea," where it is locally distributed and haunts "the deepest and dampest portions of the mountain bush." The redstart is a resident form of the North American bird, from which it is said to differ in brighter colors, smaller size, and different notes and eggs.—J. A. A.

McAtee's Birds of the Vicinity of the University of Indiana.[1]— This list of 225 species, based in part on the author's observations covering four years, but mainly upon the unpublished observations of previous observers, which include "twenty sets of migration records, covering fourteen seasons, which are on file in the archives of the Biological Survey at Washington, D. C." Three previously published lists have also been utilized. The area is comprised within a five-mile radius from the campus of the Indiana University, at Bloomington, Indiana. The observations are detailed, and in the case of the commoner species, the remarks on relative abundance and seasons of occurrence are followed by tabular statements of 'migration records,' covering generally a period of three to twelve years. At the close of the list the general facts of occurrence are presented in tabular form, for convenience of reference, and the tabular matter is followed by an index of the vernacular names of the species enumerated in the list. Six species, formerly common, are recorded as extinct, namely, Prairie Hen, Wild Turkey, Passenger Pigeon, Paroquet, Ivory-billed Woodpecker, and American Raven.— J. A. A.

Contributions to Avian Anatomy.— A paper by Margaret E. Marshall[2] treats of the anatomy (excluding osteology) of *Phalænoptilus nuttalli nitidus*, and "is intended to be the first of a series" dealing with the anatomy of the Caprimulgidæ. The paper is descriptive, and is illustrated with three plates. The work was done under the direction of Dr. Thos. H. Montgomery, Jr., and forms No. 68 of 'Contributions from the Zoölogical Laboratory of the University of Texas.' Work of this character is much needed, and should receive hearty welcome.

A paper by Frederick Walton Carpenter[3] treats in great detail of the

[1] Ecological Notes on the Birds occurring within a radius of five miles of the Indiana University Campus. By Waldo Lee McAtee. With photographic illustrations by Clarence Guy Littell. Proc. Indiana Acad. Sciences, 1904, pp. 65–202, with 32 half-tone illustrations. September, 1905.

[2] A Study of the Anatomy of *Phalænoptilus*, Ridgway. By Margaret E. Marshall, Proc. Amer. Phil. Soc., Vol. XLIV, 1905, pp. 213–240, pll. iv–vi. Oct. 28, 1905.

[3] The Development of the Oculomotor Nerve, the Ciliary Ganglion, and the Aducent Nerve of the Chick. By Frederic Walton Carpenter. Bull. Mus. Comp. Zoöl., Vol. XLVIII, No. 2, pp. 141–229, pll. i–vii. January, 1896.

eye-muscle nerves and ciliary ganglion of the common chick, including the anatomy, histology, and development. The investigation appears to have been conducted with great thoroughness and minuteness of research, but the subject is too technical in its terms and methods to warrant more than general mention in the present connection. The historical side is presented with great fullness, the 'bibliography' alone occupying fourteen pages; the researches of previous authors are summarized and discussed, as regards not only these structures in birds but in the other vertebrate classes. The work was done under the guidance of Professor E. L. Mark, and forms No. 172 of the 'Contributions from the Zoölogical Laboratory of the Museum of Comparative Zoölogy at Harvard College.'—J. A. A.

Whitaker's 'The Birds of Tunisia.'—This sumptuous work,[1] in two royal octavo volumes, with numerous colored plates, is a beautiful example of bookmaking, and the contents are worthy of the setting. The number of species treated is "about 365," of which 150 are permanently resident, 90 are summer migrants, 90 are winter migrants, and 35 are of occasional or accidental occurrence. Under each are given, first, the synonymic and bibliographical references to the species as birds of Tunisia, followed by the description (in smaller type than the rest of the text), and a biographical notice of from one to several pages, as the case may require, with often remarks on the status and relationships of the forms under notice. "Most of the information," says the author, "given regarding the occurrence and life of the several species in Tunisia is first hand, and the result of personal observation during the various journeys I have made in the Regency, but in some cases I have had to rely on the information kindly supplied me by others, foremost among whom I may mention Mr. O. V. Aplin of Bloxham, Oxon, who collected for me in Tunisia between the months of January and June, 1895, and M. Blanc of Tunis." The author's own collecting expeditions in Tunisia extended over a period of about ten years; and he speaks of the country as unrivalled in climate during a large part of the year, and as delightful to visit for sport and natural history investigations. The scenery and climatic conditions are varied, richly wooded mountains and valleys, with fertile plains relieved by lakes and rivers, characterizing the northern districts, while the central region consists of undulating park-like country, broken by lower hills, giving place further south to vast semi-desert prairie-like plains. In the

[1] The Birds of Tunisia being a History of the Birds found in the Regency of Tunis By J. I. S. Whitaker F. Z. S., M. B. O. U., etc. | Vol. I[–II]. | London | R. H. Porter 7, Princes Street, Cavendish Square, W. | — | 1905.— 2 vols., large 8vo. Vol. I, pp. i–xxxii+1–294, frontispiece (photogravure), 1 half-tone, 13 pll. col., and map; Vol. II, pp. i–xviii+1–410, frontispiece (photogravure), 1 half-tone, 2 pll. col., and map. Edition limited to 250 copies.

Introduction, where the country is described at length, Tunisia is considered as divisible into four distinct faunal areas: (1) the Northern, comprising that part of the Regency north of the Atlas Mountains, a well-wooded and well-watered district with an annual rainfall, in different parts, of about 18 to 40 inches; (2) the Central, consisting of several more or less elevated plateaux, less fertile and more arid, with an annual rainfall of only about 8 inches and a much higher temperature; (3) a semi-desert region adjoining to the southward, with very little rain anywhere and some parts practically rainless, a high summer temperature, and a scanty, dwarfed flora, except in the oases; (4) the Desert-region, situated still further to the southward, composed chiefly of "sandy desert or sand-dunes formed of blown sand, intermixed here and there with more solid ground," and the vegetation limited to "a few desert-plants which eke out an existence in spots where there may be a little moisture." A faunal map illustrates the boundaries of these several areas, and also shows the topographic features on a satisfactory scale.

This diversity of physical conditions naturally affects the ranges of the species, some that are abundant in one part of the country being rare or entirely absent in other parts. "Most noticeable also," says the author, "is the variation in the coloration of birds according to their more easterly or westerly habitat in this portion of North-west Africa, the tendency of species in Tunisia being to become pale, whereas in Marocco, on the contrary, the inclination is towards an intensity of colour." As long ago as 1863, Professor Newton (Ibis, 1863, p. 189) in referring to "Mr. Wallaston's admirable remarks on the effects of isolation and exposure to a stormy atmosphere upon the insect world, alludes to the effect of the latter conditions as one of the principal causes of the darkening of the plumage of birds.[1] "

The classification and nomenclature adopted are more or less in accordance with the out-of-date system employed long ago by Dresser in his 'Birds of Europe.' The author has, however, departed therefrom so far as to use trinomials for local forms, or subspecies, respecting which he says: "It would, indeed, be contrary to the advancement of science not to do so, and no true lover of Nature would wilfully close his eyes to their recognition." The plates are admirably drawn by Grönvold, and well reproduced by Mintern Brothers. Respecting the purpose of the work, the author says it "is merely intended to be a short, though I trust a faithful, history of the birds to be met with in the Regency of Tunis. It may, I hope, be of some use to ornithologists and bird-lovers generally, and in particular to those who may travel in the country of which it treats, which has proved to me for many years so 'happy a hunting ground,'

[1] Professor Newton's extended and definite reference, nearly half a century ago, to the influence of climatic conditions in modifying coloration in birds, with particular reference to certain British species, is of special historic interest.

and afforded such endless enjoyment." The author has evidently prepared this work because he felt that he had something useful to say, and for this reason it will meet with a hearty welcome.— J. A. A.

Ralfe's 'The Birds of the Isle of Man.'[1]— The Isle of Man, with a length of about thirty-two miles, and a maximum breadth of about thirteen, affords a sharply circumscribed area of much interest for a monographer of its bird life, and Mr. Ralfe has made a pleasing and instructive book upon this well-chosen subject, which the publisher has brought out in an exceedingly attractive form. The geographical position of the Island — only sixteen miles from the nearest point of the English coast — forbids the expectation of much that is novel in its bird life. The number of species recorded is 183, of which almost exactly one half nest on the island, while 75 are permanently resident.

The author writes from a life-long residence on the island and intimate familiarity with every portion of it; and in treating of its avifauna he states that he has endeavored to emphasize every bird that is "peculiar to it, or characteristic of it, *as Manx;* and to such species as have special interest (from their general rarity as British or otherwise) particular attention has been directed, and the account of their haunts and habits in Man made as complete as possible." An introduction of forty pages gives a detailed description of its topographic features, with pertinent notes on the fauna and flora; 'a history of Manx ornithology'; 'Migration in Man'; 'Manx bird names'; and a list in tabular form of all the species of birds known to have occurred on the island within the last century, with indications of their manner of occurrence, as to whether resident, migratory, or casual visitors. Two excellent large-scale maps show (1) the relation of the Isle of Man to the surrounding countries, and (2) the island itself, with contour lines and colors denoting the topographic features. The half-hundred full-page photographic plates further illustrate characteristic scenic features and the nesting places and eggs of many species of birds.

A detailed biographical account of the species as Manx birds occupies nearly three hundred pages, and contains, besides the exposition of present conditions, much valuable historic matter. Indeed, such a book as becomes in itself a historic landmark, to which future generations will refer as a standard for the comparison of later conditions with those here so faithfully chronicled. The history of the Manx Shearwater, as a bird of the Isle of Man, is traced from the time of Willughby and Ray (middle of the 17th century) to its extinction there early in the last century, apparently through the wholesale destruction of its eggs and young. This admirable monograph properly concludes with a bibliography, a transcript of the various game acts that relate to Manx birds, and an index.— J. A. A.

[1] The Birds of the Isle of Man. By P. G. Ralfe. Member of the British Ornithologists Union. Edinburgh. David Douglas. 1905. – 8vo. pp. i–iv, 1–321, 2 maps, illustrated title-page, and 50 half-tone plates. 18 s. net.

Economic Ornithology.— The food of the Horned Larks forms the subject of 'Bulletin No. 23' of the Biological Survey, by Mr. W. L. McAtee.[1] After a few paragraphs on their distribution and habits, some twenty pages are devoted to an exposition of their food habits and economic relations, and several pages more to the food habits of the California Horned Larks in comparison with those from other parts of the country. The food of Horned Larks outside of California consists of about one fifth insects and four fifths vegetable matter, the latter chiefly seeds of worthless or noxious weeds. The California Horned Larks are found to be almost entirely vegetarian, subsisting largely upon wild oats and waste grain, and are thus negligible as a source of injury to crops, and of no special benefit as insect destroyers. While "the charges made by farmers that the Horned Larks eat newly sown grain are confirmed,.... the insects they eat compensate many fold for the seed grain taken." The conclusion is: "The horned lark by its services to agriculture earns a right to live, and deserves protection at the hand of man." The frontispiece, in black and white, shows a group of 'Horned Larks feeding on Amaranth,' while plate ii illustrates 'Seeds of Certain troublesome weeds eaten by Horned Larks'; the text-cuts represent various species of noxious insects these birds help to hold in check.

The economic value of the Grouse and Wild Turkeys of the United States, by the late Dr. Judd,[2] treats of the food habits of these birds, and also of the 'preservation and propagation' of the Prairie Hens and the Ruffed Grouse. They are all vegetable feeders, but also destroy many noxious insects. Except for the propensity of the Ruffed Grouse to extend its browsing proclivities to the buds of fruit trees, especially of the appletree, they are quite harmless to agriculture, and are of considerable economic value as destroyers of weed seeds and harmful insects. Their commercial and other value as game is of great importance, and has led to the extermination of a number of species over considerable portions of their former ranges, notably in the case of the Prairie Hen and Wild Turkey. The Heath Hen, which formerly ranged over Connecticut and the eastern parts of New York, New Jersey, Pennsylvania, and Virginia, is now quite extinct except on the small island of Marthas Vineyard, on the coast of Massachusetts; the Prairie Hen has disappeared over much of its former range in Ohio and Kentucky, but has greatly extended its range westward and northward into Minnesota and Manitoba. Dr. Judd advocates the restocking of portions of its former range, which he believes can be readily

[1] The Horned Larks and their Relation to Agriculture. By W. L. McAtee, Assistant, Biological Survey, U. S. Depart. of Agriculture. Biological Survey, Bulletin No. 23. Washington: Government Printing Office, 1905. 8vo, pp. 37, with 2 plates and 13 text cuts.

[2] The Grouse and Wild Turkeys of the United States, and their Economic Value. By Sylvester D. Judd, Assistant, Biological Survey, U. S. Department of Agriculture. Biological Survey, Bulletin No. 24. Washington: Government Printing Office, 1905. 8vo, pp. 55, with 2 plates.

accomplished if undertaken in the proper way. He also believes that the Ruffed Grouse may be successfully propagated in captivity.

The reports on the food habits of the various species are very full, and the paper is altogether a most valuable contribution to economic ornithology. There is a colored plate of the Ruffed Grouse (a winter scene), and a plain plate of the Sage Grouse, both drawn by Mr. Fuertes.

'Game Laws for 1905' is "a summary[1] of the game laws of the United States and Canada, that govern seasons, shipment, sale, and licenses." The legislation of 1905 is reviewed, by States and Territories, followed by a tabular statement of close seasons in each for different species of game; the 'shipment of game' is treated at length, giving a list of the game prohibited from export by each State and Territory and the exceptions under which a limited number of birds or head of large game may be exported under license; a list of game the sale of which is prohibited is also given in the same detail; and there is a tabular presentation of details respecting hunting licenses, bag limits, and export regulations. The local regulations in States where the laws vary in different townships and counties are also tabulated. The principal points are further graphically shown by the aid of a series of small maps. In this way any desired information about any State or Territory may be found at a minimum outlay of time and effort.

A glance at the maps shows that several of the Canadian Provinces, and sixteen States require residents to take out licenses for hunting, while all the Canadian Provinces and all but twelve of the States and Territories require hunting licenses of nonresidents. All of the States and Territories, except Mississippi, prohibit the export of game either wholly or at least of certain kinds. The British Provinces, and all the States and Territories except nine (all of those west of the Mississippi River except Oklahoma), prohibit the sale of protected game throughout the year. It is thus evident that the crisis in game protection is apparently safely passed, intelligent legislation having already placed a check upon the senseless slaughter that in a short time would have exterminated the game from wide areas where it now has a chance to slowly recover, at least to some extent, from the reckless depletion of former years.

Proceedings of the Delaware Valley Ornithological Club.— 'Cassinia' for 1905[2] contains the usual amount of matter, relating especially to the ornithology of Pennsylvania, New Jersey, and Delaware, including an 'abstract of the proceedings' of the Club for 1905. The first article is a biographical notice of Charles Lucian Bonaparte, by Dr. Spencer Trotter.

[1] Game Laws for 1905. A Summary of the provisions relating to Seasons, Shipment, Sale, and Licenses. By T. S. Palmer, Henry Oldys, and R. W. Williams, Jr., Assistants, Biological Survey. Farmers Bulletin No. 230. U. S. Department of Agriculture. 8vo, pp. 54, with maps, 1905.

[2] Cassinia, A Bird Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia, 1905.— 8vo, pp. 88, frontispiece, and 1 half-tone plate. Philadelphia, Pa., Feb., 1906. 50 cents.

illustrated with a portrait. Says the author, very truly, "Alexander Wilson will always hold a distinctive place as the pioneer worker in American ornithology. Audubon was the artist, the gifted painter of our bird life. Both of these men were poet and artist rather than scientist. It was Charles Lucien Bonaparte who first placed American ornithology on the firm basis of science." Mr. Cornelius Weygandt writes of the 'Summer Birds of Broadhead's Creek, Munroe Co., Pa.'; Mr. Richard F. Miller on the 'Breeding of the Florida Gallinule (*Gallinula galeata*) in Philadelphia County'; Mr. Sandford Omensetter on 'The Media Grackle Roost' (with a half-tone plate); Mr. C. J. Peck on 'The Overbrook Grackle Roost'; Mr. Witmer Stone on 'June Birds of Fulton County, Pa.'; Mr. E. Semour Woodruff on 'Summer Birds of Milford, Pike County, Pa.'; and a 'Report on the Spring Migration of 1905,' is compiled by Mr. Witmer Stone. The 'Abstract of Proceedings,' eight pages, is followed by a 'Bibliography for 1905' of the ornithological papers by the various members of the Club, wherever published; by 'Bird Club Notes,' a list of the officers and members, and the index. The officers for 1906 are: Spencer Trotter, M. D., President; William A. Shryock, Vice-President; Herbert L. Coggins, Secretary; Stewardson Brown, Treasurer.— J. A. A.

CORRESPONDENCE.

Professor Clark on 'The Feather Tracts of Swifts and Hummingbirds.'

To the Editors of 'The Auk':—

Dear Sirs:— Recently I have read with pleasure the contribution of Professor Hubert Lyman Clark to the above subject, and which appeared in the last issue of 'The Auk' (Jan., 1906, pp. 68–91). It is not my intention to present here anything which may be considered at all in the light of a full review of this article, but I do desire to point out a few of the slips Professor Clark has again been guilty of in quoting my own writings in the same field. I say again, because he seems to be particularly unfortunate in the construction he places upon my words and statements as they appear in an article I printed a good many years ago in the Journal of the Linnæan Society of London (1888) on my 'Studies of the Macrochires,' etc. The nature of these slips I undertook, and I think very successfully, to point out in 'The Condor' some time since (Vol. IV, No. 2, p. 47).

Professor Clark in his article in 'The Auk' takes great pains to make it clear to his readers when I wrote my Linnæan article on the 'Macrochires'

that in my account of the pteryloses of the swifts and hummingbirds, I made use only of "Nitzsch's figures, which are, unfortunately very inaccurate" (p. 69), and, further, that the "position" I assume "is clearly based on insufficient or unreliable evidence." Both of these statements or insinuations are utterly without foundation. In common with most writers on pterylography, I make constant reference to Nitzsch's figures, but in nearly every instance in a critical way, pointing out his deficient comparisons, oversights, and lack of elaboration of the subject. In so far as the swifts and hummingbirds go, I had ten times, or more, the amount of material before me, illustrating those two groups, that Nitzsch had when he wrote his 'Pterylographie,' and I hardly think that any one will ever charge me with not having used "the evidence." A *partial* list of my material is presented in my Linnæan article, and I have examined scores of other specimens not enumerated there. That list includes a varying number of individuals of two species of trogons; three genera of the Caprimulgidæ; various swifts, and a great many hummingbirds; and, finally, all the forms of our swallows known at the time, and two species of *Ampelis* for comparison. So far as the hummingbirds and swifts are concerned I place more reliance upon what is to be found in the cases of *freshly killed* specimens, than I do upon many alcoholics, for the reason that it too often happens in the case of the latter, that they are specimens left over that the field collector did not have the time to skin, and in a day or two throws them into alcohol. Now with the tropical hummingbirds and many other forms, this means that the early stages of dermal decomposition has set in and the feathers on the gular area, the abdomen, and elsewhere will come out and be lost. This I have had happen in the case of some swifts I collected in New Mexico, and often in the hummingbirds.

When he comes to discuss the feather tracts of the Cypseli (p. 70), Professor Clark states that "On the anterior part of the neck, close to the head, is a large and very evident apterium, one of the most characteristic features of the pterylosis." He states that I "positively" deny "the existence of this apterium in the swifts," and I would like to ask my critic where I make any such denial. The locality referred to, being on the *anterior* part of the neck in a short-necked bird like a swift can be nothing less than the gula (or the gular area or region), and I fail to find any special reference to it in my writings anywhere. What I did deny was the presence of the *nuchal apterium* in the swifts and swallows, but recognized its presence in the hummingbirds. It is certainly absent in the swallows, and personally I have never met with it in the case of a swift; but then I have only examined some forty or fifty of them for the purpose (*Chætura*, *Cypseloides*, *Cypselus*, and *Aëronautes*).

Professor Clark further states that I deny the presence of the "supra-ocular apteria" in the swifts (p. 90), whereas I do nothing of the kind, but simply invite attention to the fact that Nitzsch figures them for *Cypselus*, and as I did not dispute his recognition of their existence, it is fair to presume that I recognized the presence of those apteria in the *Cypseli* generally. The fact of the matter is, twenty years ago I believed that

pterylographers the world round knew of those little naked places over the tops of the eyes in swifts. Personally, I have yet to find a hummingbird wherein the skin covering the pinion is *black*, and as this communication goes to press, I have examined an excellent specimen of *Trochilus colubris*, and it possesses no such character. Everyone knows, who knows anything of the subject at all, that it is present in swifts.

R. W. Shufeldt.

6th January, 1906.

A Suggestion.

To the Editors of 'The Auk': —

Dear Sirs: — During the revision of the A. O. U. Check-List I trust that the common names will not be entirely neglected. Most of the names in the last edition are well chosen and have stood the test of time, but a few appear to be either inappropriate or else a trifle bookish. As an example of a 'bookish' name the word "partridge" may be cited. Neither ornithologists or sportsmen employ this word in the A. O. U. sense. In speaking of species of *Oreortyx*, *Lophortyx*, *Callipepla*, and *Cyrtonyx*, they, of course, use "quail." Our western members may not know that *Bonasa* is commonly called "partridge" from New England to Pennsylvania, while the same name is applied to *Colinus* in the South. Hence we have a curious confusion of terms. I wish to propose that "quail" be substituted for "partridge" in the next check-list. I have heard the objection raised that these birds are not true quail, but as they are not true *partridges*, this fact may be cheerfully overlooked.

Names which can be improved upon are such as Louisiana Tanager, Arkansas Kingbird, Arkansas Goldfinch, and possibly a few others with inappropriate geographical handles. Western Tanager has been in literature for fifteen years and is a better name. I leave the others to the tender mercies of a committee.

In California the Mountain Quail of nearly all sportsmen and bird men is *Oreortyx pictus plumiferus*, called Plumed Partridge in the Check-List. Why not change things about and call *pictus*, Harlequin or Painted Quail, and place Mountain Quail where it belongs? Geographical names are becoming more popular (and are more useful) than personal names. Hence we now frequently see Sierra Junco, instead of Thurber Junco. This commendable practice could be extended advantageously. Mr. Grinnell in describing *Parus rufescens barlowi* had to rename *neglectus*, which he called Marin Chickadee. Mr. Ridgway has unfortunately discarded this for Nicasio Chickadee — unfortunately, because Nicasio is only a very little town that is not likely to last a great while, whereas Marin County, California, covers most of the range of *neglectus*. There are other slight changes, "mere details" perhaps, but wise men tell us that only through attention to details shall we arrive at perfection.

My idea has been to make the suggestion rather than to furnish specific cases for its application.

Stanford University, Cal. Walter K. Fisher.

The English Sparrow Problem.

EDITORS OF 'THE AUK': —

Dear Sirs: — It is now 17 years since the U. S. Department of Agriculture issued an urgent appeal to the people to take effective action against the English Sparrow. I wish to find out what has been done and to obtain a fairly complete and unbiased expression of opiñion from practically the whole United States and Canada. If the whole country is prepared to act in this matter, it is confidently believed that the species can be exterminated from the Continent, or from any considerable territory in which the necessary consensus of opinion exists. It is almost useless for one town or city to exterminate the sparrows, for they immediately swarm over from neighboring places; and the great fecundity of the species renders half-way measures a waste of time and effort. Several States have had bounty laws for the English sparrow and one — Michigan — has recently reënacted a bounty law. It seems clear from the enormous rate of increase and from past experience that the work must be undertaken on a higher plane than that of bounty getting, if any permanent progress is to be made.

Will you please insert the accompanying circular in your next issue, and, if possible, add a word of editorial comment.

Very truly yours,

A. H. ESTABROOK.

Circular of Inquiry with reference to the Present Status of the English Sparrow Problem in America.

1. Are you familiar with Bulletin No. 1, The English Sparrow in America, published by the Agricultural Department in 1889; and do you agree with the facts there presented and with its conclusions?

2. Is the English Sparrow present in your locality? How numerous? Are they increasing or decreasing in numbers?

3. What is being done to exterminate them? Please outline methods which you deem effective.

4. What influence have you observed the English Sparrow to have upon native birds?

5. Would public opinion in your locality favor the adoption of effective measures to exterminate this species?

6. Please state the facts and arguments, pro or con, which decide this problem in your own mind.

Everybody interested is requested to send in replies to the above questions before June 1, if possible, to the undersigned. It is proposed to gather a consensus of opinion from all parts of this Country and Canada. The data will be made public as soon as possible.

A. H. ESTABROOK,
Clark University, Worcester, Mass.

March 5, 1906.
(Newspapers please copy.)

NOTES AND NEWS.

DR. JEAN LOUIS CABANIS, an Honorary Fellow of the American Ornithologists' Union, died February 20, 1906, in the ninetieth year of his age. One of his earliest papers, and perhaps his most important single contribution to ornithology, appeared in 1847, entitled 'Ornithologischen Notizen' (Arch. f. Naturg., 1847, pp. 186–256, 308–352), in which he proposed a new classification of birds, which in many respects was a great improvement upon previous schemes, being based on a number of characters here for the first time given prominence. His system was soon after given fuller expression in the 'Museum Heineanum,' published in parts, beginning in 1850. He was also the author of the ornithological parts of Tschudi's 'Fauna Peruana' (1845–46), and of Schomburgk's 'Reisen in Britisch-Guiana' (1848). In 1853 he established the 'Journal für Ornithologie,' which he edited for forty years, being succeeded in this function in 1894 by his son-in-law, Dr. A. Reichenow. His ornithological papers number several hundred, and include the birds of all countries. For many years he was custodian of the zoölogical collections of the University Museum, Berlin, and general secretary of the German Ornithological Society.

DR. PAUL LEVERKÜHN, a Corresponding Fellow of the American Ornithologists' Union, died suddenly of pneumonia at Sophia, Bulgaria, December 5, 1905, in the thirty-ninth year of his age. He was private secretary to his Royal Highness the Prince of Bulgaria, and director of his Scientific Institutions and Library. He was the author of a large number of ornithological papers, many of them bibliographical and biographical. Among the latter may be mentioned his biography of the three Naumanns in the first volume of the new edition of Naumann's 'Vögel Deutschlands,' later issued separately.

THE A. O. U. Committee on Nomenclature and Classification of North American Birds held a four days' session in Washington in January last. Besides acting on many of the cases before it, and referring those left undecided to subcommittees for further investigation, it decided on the character of the proposed third edition of the Check-List, and apportioned the work of its preparation among the different members of the Committee. The Committee on Revision of the Code also held several meetings in January, and submitted a preliminary report to the Council, which, after some discussion, was referred back to the Committee for completion, with the understanding that its final report will come up for action at the meeting of the Council to be held in Washington in November next, in connection with the annual Congress of the Union.

FROM the 'Report of the Chief of the Division of Biological Survey for 1905,' we learn that during the year ending June 30, 1905, the field work in Texas was completed, and is being continued in New Mexico and Colorado, under the direction of Mr. Vernon Bailey, chief field naturalist. A report on the Texas work, by Mr. Bailey, has just been published, treating in detail of the life zones of the State and its mammals and reptiles, and a report on the birds, by Mr. Oberholser, is nearly completed. The biological work in the Mackenzie basin, by Mr. E. A. Preble, is also finished, and the preparation of a report thereon is well advanced. Mr. Preble "wintered at Fort Simpson, on the Upper Mackenzie, for the purpose of studying the conditions of an arctic winter and of being on the ground so as to begin investigations in the early spring. Having finished work at Fort Simpson, he descended the Mackenzie in June, visited Fort MacPherson, on the Lower Peel River, making collections here and at other points on his way southward." Explorations were also carried on in the northern Rocky Mountains of Yukon Territory, under the direction of Mr. Wilfred H. Osgood, who, with the cooperation of Mr. Charles Sheldon, of New York, made trips to the Ogilvie Range, near the Alaska boundary, and to the region about the head of the Macmillan River. Field work was also continued in California, under the immediate direction of the Chief of the Biological Survey, Dr. C. Hart Merriam.

Work in economic ornithology has been prosecuted as usual and the results, as published in various recent 'bulletins,' have already received notice in these pages. Respecting game protection, "Every effort has been made to secure the adoption of modern methods for the protection of game, to meet the numerous demands for aid and information concerning game laws and methods of enforcement, and to co-operate in every way possible with the several States and the various game-protective associations." During the year more than 100 Capercailzie were introduced for liberation on Grand Island, Mich. About 2000 other game birds were introduced for stocking covers, including pheasants, quail, partridges, ducks, etc.

During the year several additional game and bird reservations were set aside, as the Wichita Forest Reservation, in the Wichita Mountains, Oklahoma, the Stump Lake Reservation in North Dakota and the Breton Island Reservation, off the coast of Louisiana. Various special investigations regarding the protection of game, including the migration and protection of shore birds, have been undertaken, and the results in some cases have already been published.

Work on the migration of birds is still carried on as usual, including the sending out of migration blanks and the recording of migration records for United States birds, in particular with reference to north and south of the United States, and the preparation of a report on the Distribution and Migration of North American Birds, which is well under way.

Swales, Bradshaw H. Additions and Additional Data to a Preliminary List of the Land Birds of Southeastern Michigan. (Wilson Bulletin, Dec., 1905, pp. 108–114.)

Thayer, John E., and Outram Bangs. (1) The Mammals and Birds of the Pearl Islands, Bay of Panama. (Bull. Mus. Comp. Zoöl., XLVI, No. 8, pp. 137–160, Sept., 1905.) (2) Vertebrata from the Savanna of Panama. (*Ibid.*, No. 12, Jan., 1906. Aves, pp. 213–224.)

Whitaker, J. I. S. The Birds of Tunisia, being a History of the Birds found in the Regency of Tunis. 2 vols. royal 8vo. London: R. H. Porter. 1905.

American Ornithology, VI, Jan.–March, 1906.

Annals of Scottish Nat. Hist., Jan., 1906.

Aquila, XII, 1905.

Avicultural Magazine, N. S., IV, Jan.–March, 1906.

Bird-Lore, VIII, No. 1, Jan.–Feb., 1906.

Birds and Nature, XIX, Jan.–March, 1906.

Bulletin British Orn. Club, XVI, Nos. CXX–CXXII, Dec., 1905, Jan. Feb., 1906; XVII, Feb., 1906.

Cassinia, 1905.

Condor, The, VIII, Nos. 1, 2, 1906.

Emu, The, V, Jan., 1906.

Forest and Stream, LXVI, Nos. 1–13, 1906.

Journal of the Maine Orn. Soc., VIII, No. 1, March, 1906.

Monthly Bulletin Pennsylvania Dept. Agric., Zoölogy, III, Nos. 8–10, Dec. 1905, Jan., Feb., 1906.

Ornithologisches Jahrbuch, XVII, Heft 1, 1906.

Ornithologische Monatsberichte, XIV, Nos. 1–3, Jan.–March, 1906.

Ornithologische Monatsschrift, XXX, Nos. 11, 12, 1905; XXXI, Nos. 1, 2, 1906.

Ottawa Naturalist, XIX, Nos. 10–12, 1906.

Our Animal Friends, XXXIII, Nos. 5–7, Jan.–March, 1906.

Philippine Journ. Science, I, No. 1, Jan. 1906.

Publications of the Bureau of Government Laboratories, Philippines, Nos. 34, 35, Oct., Dec., 1905.

Revista do Museu Paulista, VI, 1904.

Science, N. S., XXIII, Nos. 575–586, 1906.

Verhandlungen der Ornith. Gesells. in Bayern, V, 1904 (1905).

Warbler, The, 2d Ser., II, No. 1, 1906.

Zoologist, The, 4th Ser., X, Nos. 109–111, 1906.

PUBLICATIONS RECEIVED.

Bangs, Outram. (1) What is *Icterus gaudanensis* Underwood? (Proc. Biol. Soc. Washington, XVII, pp. 167–170, June 29, 1905.) (2) The Name of the Panama Green Honey Creeper. (*Ibid.*, p. 186.) See also Thayer, John E.

Butterfield, W. Ruskin. A Plea for the further Recognition of Subspecies in Ornithology. (Zoölogist, Feb., 1906, pp. 62–64.)

Collett, R. (1) Om en Del for Norges Fauna nye Fugle. (Christiania Videnskabs-Selskabs Forhandlinger 1905, No. 10.) (2) Hybrids among Norwegian Birds, and their Diagnoses. (*Ibid.*, No. 11.)

Carpenter, Frederic Walton. The Development of the Oculomotor Nerve, the Ciliary Ganglion, and the Abducent Nerve in the Chick. (Bull. Mus. Comp. Zoöl., XLVIII, No. 2, pp. 141–230, pll. i–vii.)

Clarke, Wm. Eagle. Ornithological Results of the Scottish National Antarctic Expedition. II. On the Birds of the South Orkney Islands. (Ibis, Jan., 1906, pp. 145–187, pll. iii–xiii, and map.)

Cockerell, T. D. A. (1) Do Birds eat Butterflies? (Nature Study Review, I, No. 5, Sept., 1905, pp. 209–212.) (2) Spencer Fullerton Baird. (Pop. Sci. Monthly, Jan., 1906, pp. 63–83.)

Goeldi, Emilio Augusto. As Aves do Brasil. Primeira partie, pp. 1–310, 1894; Segunde partie, pp. 311–661 + 1–82, 1900.

Grinnell, Joseph. The Pacific Nighthawk. (Condor, VII, No. 6, Nov. 22, 1905, p. 170.)

Hartert, Ernst. (1) Some Antiericiticism. (Ibis, Oct., 1901, pp. 542–551.) (2) Eine logisch unabweisbare Aenderung in der ornithologischen Nomenklatur. (V. Internat. Zoologen-Congress, pp. 897–899.) (3) Antikritik. (Ueber die Auffassung des Begriffes Subspezies, u. a. m.) (Journ. f. Orn., Oct., 1901, pp. 555–562.)

Leisewitz, Wilhelm. Ueber die wirtschaftlishe Bedeutung unseres Spechte. (Verhandl. Orn. Ges. i. Bayern, V, 1904, pp. 61–76.)

McGregor, Richard. I. Birds from Mindoro and small adjacent Islands. II. Notes on three rare Luzon Birds. [Publ.] Bureau Govern. Laboratories, No. 31, Oct., 1905, pp. 1–29, pll. i–xvii.)

Merriam, C. Hart. Report of the Chief of the Division of Biological Survey for 1905. (Ann. Rep. Dept. Agric., 1905, pp. 303–315.)

Ralfe, P. G. The Birds of the Isle of Man. 8vo, pp. 321, frontispiece, 2 maps, 50 half-tone pll. Edinburgh: David Douglas. 1905. 18s. net.

Ridgway, Robert. Some Observations concerning the American Families of Oligomyodian Passeres. (Proc. Biol. Soc. Washington, XIX, pp. 7–16, Jan. 29, 1906.

Schalow, Herman. Beitrage zu einer ornithologischen Bibliographie der Atlas-Gelaetes. (Journ. f. Orn., Jan. 1906, pp. 100–143.)

Stebbins, Joel. A Method of Determining the Heights of Migrating Birds. (Pop. Astron., No. 132, 8 pp., repaged.)

Stone, Witmer. (1) On a Collection of Birds and Mammals from the Colorado Delta, Lower California. With Field Notes by Samuel N. Rhoads. (Proc. Acad. Nat. Sci. Phila., 1905, pp. 676–690, Dec. 6, 1905.) (2) On a Collection of Birds from British East Africa obtained by Mr. George L. Harrison, Jr. (*Ibid.*, pp. 755–782, Jan. 24, 1906.)

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SOME LIGHT ON NIGHT MIGRATION.

BY WITMER STONE.

ORNITHOLOGISTS have long been familiar with the phenomenon of night migration; that is to say, we recognize that such flights occur on every favorable night during the period of the spring and fall movements; but it is only the accomplished fact that we are actually able to see — the great host of transient birds that are in our woodland in the morning that were not there the previous day.

The nearest that we can usually come to observing the flight itself is to stand out in the open on some starlit night and listen to the faint chirps that come floating down from the great vault above. We strain our eyes in an effort to catch a glimpse of the throng that we know must be passing overhead, but all in vain, for the migrants of the night are shielded by the darkness alike from friend and foe. To a favored few the opportunity is now and then offered of getting a glimpse of the passing birds. From the top of some lighthouse we may see a few of the transients as they come for a moment within the glare of the lamp and, bewildered, dash themselves against it or pass on again on their course. Sometimes, too, upon the approach of a sudden storm part of the migrants, bewildered and temporarily lost, fly directly against a lighted building or into the illuminated streets of a town or aboard some vessel at sea. Or, again, those who have access to a large telescope may, by keeping it focused upon the full moon as it rises, see a few of the passing migrants as dark specks silhouetted against the bright disk.

The possibility of viewing the main flight as a whole might well be looked upon as an idle dream, and yet this was my privilege on the night of March 27 of the present year.

Shortly after eight o'clock in the evening there occurred in the western part of the city of Philadelphia, within half a mile of the historic Bartram's garden, a great conflagration which burned continuously until noon of the following day. The fire was confined to a lumber yard, one of the largest in the city, and between four and five acres of thoroughly seasoned hardwood lumber were burning simultaneously throughout the night. The nature of the fuel produced a tremendous illumination with very little smoke — practically none of the dense black clouds that usually accompany fires in a large city.

The sky was brilliantly illuminated for a great distance in all directions, and objects floating overhead, such as scraps of flying paper, reflected the light as if aflame. Early in the night, numbers of bats, doubtless driven out when the sheds caught fire, were to be seen, and some English Sparrows, which had probably roosted among the lumber piles, were circling about thoroughly bewildered, looking exactly like flying embers, so brilliantly did their breasts and wings reflect the glare of the flames.

Presently I realized that the birds were increasing in numbers, that the bulk of them were not English Sparrows, and that instead of the bewildered, aimless flight of these miserable foreigners they were passing steadily across the heavens from southwest to northeast. At ten o'clock the flight was at its height and I estimated that two hundred birds were in sight at any given moment as I stood facing the direction from which they came with the fire to my left. They flew in a great scattered, wide-spread host, never in clusters, each bird advancing in a somewhat zigzag manner, just as flights of warblers or finches pass across the open from one copse or thicket to another. Far off in front of me I could see them coming as mere specks, twinkling like the stars, and gradually growing larger as they approached until their wings could be distinctly seen as they passed overhead. For some distance to the right they could be seen passing steadily on, those most remote appearing and disappearing as their moving wings caught the reflection or lost it again.

Over all the illuminated area, and doubtless for a great distance beyond, they seemed about evenly distributed, those immediately over the flames glowing like coals of fire, those further away appearing silvery white.

I could only guess at the species, but to all appearances they were mainly finches, probably Tree Sparrows, Juncos and the like, while some were noticeably smaller. A few larger individuals, with a continuous rapid wing motion and heavy bodies, I took to be Woodcock or Rail. Far up in the air a Sharp-shinned Hawk circled for some time, doubtless drawn by the light, and two flocks of American Mergansers passed, going at right angles to the migratory flight and evidently passing from the river to the reservoirs in Fairmount Park where they find a safe and sheltered retreat.

I am inclined to think that the migrants were not influenced by the fire so far as the direction of their flight was concerned, as those far to the right were not coming toward the blaze but keeping steadily on their way. The birds, however, were very probably drawn down from a higher elevation by the unusual illumination.

The general trend of the flight was exactly parallel to the Delaware River. Up to eleven o'clock, when my observations ceased, it continued apparently without abatement, and I am informed that it was still in progress at midnight. Conditions were exactly favorable for migration, the mild weather of the few preceding days following the unusually severe weather that prevailed during most of the month; and the peculiarly clear night.

This wonderful sight had one regrettable feature. Occasionally a bird would fly over at a much lower altitude than the main body, and if it happened to pass over any part of the burning area it seldom escaped destruction. Up in mid air, apparently clear of flame and smoke, though evidently within range of the terrible heat, a slender thread of silvery smoke came trailing out from the unfortunate bird, like the unfurling of a skein of yarn; it would fly wildly and then, bursting into flame, fall into the roaring furnace below. I saw twenty or thirty birds perish thus during the evening.[1]

[1] Since the above was written I have seen six partially burned birds that were picked up on the outskirts of the fire. Two were Song Sparrows and four were Juncos. About a dozen others that were examined but not preserved were stated to belong to the same species.

Some thirty thousand persons, it is estimated, viewed the fire, and a large number of them saw the birds, but probably very few appreciated the opportunity that was offered them of looking behind the dark curtain which so persistently shrouds one of nature's greatest mysteries, or realized that what they saw was, literally as well as figuratively, 'some light on night migration.'

NESTING OF THE GREAT BLUE HERON IN MONTANA.

BY E. S. CAMERON.

Plates IV and V.

SINCE living near the Yellowstone I have often wondered where the Great Blue Herons (*Ardea herodias*) nested which flew up and down the river, or stood motionless on the sandbars intercepting its brown flood. The different ferrymen, on being questioned, said the birds passed and repassed daily, but could supply no information as to their breeding haunts. Mr. A. C. Gifford of Fallon informed me that he recollected when there were twenty nests in some cottonwoods about two miles below his property, but was doubtful if herons bred there in recent years, and Mr. Dan Bowman had known of one nest on the Powder River in a cottonwood close to his ranch. These were my only records. Accordingly, on May 30 my wife and I rode to the grove indicated by Mr. Gifford and made a thorough investigation, which proved a task of some difficulty on account of the thick underbrush of wild roses, willows, and bulberry bushes, concealing regular pitfalls, through which a horse could scarcely force its way. Part of the wood was made into an island by a small branch of the river (called here a slough), and two pairs of Blue-winged Teal, evidently nesting, were seen,



YELLOWSTONE RIVER, MONTANA, JUST ABOVE THE GREAT BLUE HERON ISLAND.



FIG. 1.—SITE OF GREAT BLUE HERONRY, YELLOWSTONE RIVER, MONTANA.
The nests are nearly concealed by the thick foliage.



FIG. 2.—YOUNG GREAT BLUE HERON, TWO MONTHS OLD.

but no trace was found of the heron colony. It was my conviction that, at the present time, herons nested on inaccessible islands in the Yellowstone and that the nests, accordingly, escaped observation, as boats are very scarce in this country.

Last year (1905) I was able to locate a heronry on an island of the Yellowstone about fifteen miles below my ranch, but, previous to the discovery, my friend Mr. J. H. Price had written sending particulars of another which he had visited on Powder River about thirty miles above the mouth. The latter, therefore, received attention first, and on June 29 an expedition was made there, when we found seven nests at the top of two tall pole-like cottonwoods, placed in the extremities of branches so thin that they would not bear the weight of even a small boy. Six of the nests were in a tree at the extreme edge of the river bank and three overhung the water in such a manner that any birds falling out would have been carried away on the swift current. The seventh nest was built at the summit of another tree, directly behind the first, in a dead branch, as also was one of the other nests. All were quite out of reach of the most expert climber except one which was nearest to the first fork of the tree containing six. At our approach nine old birds flew to a sandbar in the centre of the river, on which, later, they were observed to be fishing, but after their departure no sign of life was visible at the nests. A recently dead, full feathered nestling of large size which had been killed by a fall from above lay under the trees. We proceeded to pitch our tent in a glade of the cottonwoods, choosing a situation about a hundred yards off where unobstructed observations could be made on several nests through binoculars. It was found that the birds, both old and young, were extremely wary, so that until all talking and camp preparations ceased there was no sign from either. With such a small number of nests the peculiar odor of decaying fish from the heronry, although strong, was not very unpleasant. After a long period of silence the young herons, becoming hungry, stood quite erect, when it was seen that five nests contained four birds in each and the remaining two but three occupants. It is a likely supposition that all seven nests, at first, held four birds each, as the nestling picked up under the tree accounted for one, while another might easily have fallen into the river.

The young herons presented a remarkable sight, as in their eagerness to see the parents arrive they stretched their long necks to the fullest extent and with bills pointing straight up in the air looked from below like so many snakes. This extraordinary attitude is shown at the left hand branch in the photograph of the tree top (Plate V), but it was found impossible to obtain a near view because at the slightest unfamiliar sound the young herons crouched down as low as possible, maintaining complete silence. This, no doubt, accounted for none being seen upon our arrival, but it seemed strange that such large birds could hide so easily and, subsequently, their ability thus to conceal themselves appeared to me the most striking feature about them. That three or four young herons could make themselves invisible from below in quarters only large enough for one bird, as shown by the photographs, was little short of incredible, nevertheless, they managed to do so. On the first day of our arrival a thunderstorm cooled the air, but next morning, the remarkable effect which the hungry young herons produced was further increased by the rapid inflation and contraction of their gullets as they panted in the hot sun. They seemed to suffer as much as the young Golden Eagles (see Auk, Vol. XXII, p. 162), and, from their situation, being exposed to all vicissitudes of weather, it is certain that the parents shaded them during intense heat. When unalarmed they kept up a continuous soft croaking like frogs which, on the appearance of the parents, was changed to a vociferous quacking like the ducks in a farm-yard.

I was informed by Mrs. Murphy, who lived at a ranch near, that this heronry was established here for the first time and that three of the birds began to lay on April 23, when only three nests were completed. As the period of incubation is about 28 days some of the young herons were now five weeks old. We arrived at the heronry at 2 P. M. and the old birds could not summon sufficient courage to recommence feeding their young for four hours, during the latter part of which time my wife and I remained quiet in the tent. The herons flew from the river directly to the nests, but, too cautious to alight immediately, circled round and round above the trees uttering a harsh low croak recalling Canada Geese. Even after the fears of the majority had been allayed, several herons continued circling, passing frequently within gunshot of the tent,

which they regarded with such suspicion that a sentinel was perched on a high bough keeping watch on it each time that the nestlings were fed. From this time (6 P. M.) until 11 P. M. the parents catered to the wants of their offspring, and since out of a total of fourteen old birds only three or four came at one time, the operation was practically incessant. After dark the arrival of the parents was signalled by the quick transition from a temporary lull to the furious quacking above mentioned on the part of the young birds. The latter were fed on the small fish known as 'suckers' here, and are able to manage quite a large gullet-full, two of the fish which fell under the tree being seven inches long. Both parents alternately fed the nestlings, nor would it have been possible otherwise. Between the screaming, flapping, and struggling of the young to be fed, their rivalry for the first fish, and the efforts of the parent to satisfy them it seemed as though the frail bough must break under their united weight.

As is well known, herons feed their young by regurgitation and the end of the process has been thus graphically described: "The struggle between the young heron and the parent seems like a wrestling-match, the former standing up almost as high as the latter, the tree swaying to and fro, and both birds staggering upon the nest to such an extent that the mother is occasionally compelled to step off and stand on one of the branches to avoid falling. This struggle occurs when all the food has been given, and the mother is seeking to extricate her bill from that of her young." [1]

On this occasion the nestlings became so excited as to leave the nest altogether for the branch, and only saved themselves from a fall into the river below by the combined use of bill, feet, and wings. In a long-legged bird like a heron these arboreal gymnastics are very curious to witness, and are sometimes unsuccessful, as evidenced by the many bodies found beneath the trees in large colonies.

The only accessible nest in the colony of which I am now writing contained three large full feathered young belonging to the same brood as the unfortunate bird which had fallen under the tree. As it was impossible to make a photographic exposure of them *in*

[1] Water Birds of North America, by Baird, Brewer, and Ridgway, Vol. I, p. 19, 1884.

situ one was lowered to a broken cottonwood stump underneath the nesting tree. The bird, however, though it could stand so erect in the nest, refused to do so for even the fraction of a second outside, and as no amount of coaxing, nor our absence, had any effect in altering its intention, only a picture of the crouching pose could be obtained. The temporary removal of this young heron caused one of its companions to leave its own nest and climb much higher up to enter another. Several times it seemed likely to fall into the water but managed to regain its balance with violent flapping of wings. Later, when all was again quiet, the four real owners of this nest stood erect indignantly protesting at this outrage on their rights, and one bolder than the rest endeavoured to eject the intruder. The new-comer as valiantly resisted, and being of the same size a protracted and most extraordinary battle ensued which I witnessed through my binoculars. The birds would feint, and spar for a hold, until one was able to seize the other by the neck when, exerting all its strength, it endeavored to drag its antagonist over the side of the nest. Both in turn had the advantage and swayed backwards and forwards, while the three non-combatants crouched down in characteristic fashion, so that the battle was waged partly on their bodies and partly on the edge of the nest. The fight was continued until an old bird arrived with fish, when the five nestlings again stood erect, and, in the general scramble for food, the parent fed all without discrimination. As it became too dark for binoculars I saw no more that evening, but next morning the duel was renewed until the interloper became exhausted, and, being driven from the nest, scrambled down the branch to its rightful abode. As far as I could see, all the other young birds lived in perfect harmony.

The bill of young herons is a most formidable weapon, and in handling them much greater precaution is necessary than in the case of immature hawks or eagles; for they occasionably strike at the face and might easily cause the loss of an eye. The description of a young heron is as follows: — Age, 5 weeks; length from point of bill to end of claws, stretched out, 42 inches; wing, 12 inches; tarsus, $5\frac{3}{8}$; bill, $5\frac{3}{8}$; weight, 4 lbs. The prevailing color of the bird is slate gray, the feathers of the lesser wing-coverts and neck edged with chestnut, while the primaries and secondaries are

black. A number of feathers at the bend of the wing are white, broadly edged with bright chestnut. Below, the bird is mixed black and white with traces of chestnut. The chin is white and the crown black with only the commencement of a crest which is just beginning to grow. The tibiæ are pale chestnut; their bare portions pale green; the tarsus and feet slate gray. Upper mandible, black; lower, yellow. Irides, yellow.

This description would also serve for the bird at two months old, excepting that the occipital plumes are then well developed.

The island heronry in the Yellowstone was, of course, in a much more inaccessible and romantic situation which in the absence of a boat could only be reached on horseback when the river was low. Indeed, at certain times the densely wooded island was under water, this being the case when the herons first commenced building operations. The existence of the nests could only be suspected by watching the birds flying to them, for, though it was possible to make out two of the highest with extremely powerful binoculars, the heronry, on the whole, was well hidden by cottonwoods from ordinary observation. We visited this island on July 30, when the stream separating it from the north shore was narrow and only girth deep. During the June rise, a few weeks earlier, it would have been about 250 yards wide. For a short distance after landing it was necessary to force a way through willows as high as the rider's head, but otherwise there was little underbrush on the island, which extended to about a quarter of a mile each way, and was everywhere carpeted with a luxuriant growth of golden-rods, wild rye, and tall sand-grass. A few thickets of bulberry bushes could easily be avoided.

The heronry contained altogether eighteen nests, which were placed in the tallest trees on a sandbank sloping gradually to the main channel of the river, here about 300 yards wide. In two trees, containing altogether ten nests, several could be reached by climbing, the trunks in this case being so close together that the topmost branches intermingled. The distance from these nests to the ground was fifty measured feet. On our arrival numbers of the fully fledged young stood at their nests causing an effect which, when seen through the leafy screen, against an intensely blue sky, recalled the pictorial achievements on Japanese china. All, except two or three which scrambled back into the nests, flew away upon

our approach, but it was subsequently found that they returned here every evening to roost. Two dead, well feathered nestlings, eggshells, and some dried up fish lay under the trees. That night we rode to a ranch, about two miles off, for shelter, when the owner told us that herons had bred on the island for many years, repairing and adding to the old nests every spring. He said that formerly there were about fifty nests, but that, some years since, a man had cut logs on the island, thereby causing many birds to desert it. Beyond this, the herons had met with little or no disturbance, as scarcely anyone knew of the colony, which I could well believe. We also learned that the heronry mentioned by Mr. Gifford had been entirely deserted on account of tree-felling operations, shy birds like herons having been unable to endure such invasion of their sanctuary. As we sat on the veranda at dusk herons were seen flying low across the meadow to the heronry; we computed that both from here and the Powder River they sometimes go twenty miles from home in their search for food. Although the heron appears to fly so slowly it is in reality one of the swiftest of birds, and Sir John Sebright referring to the chase of the common Heron of Europe with Peregrines remarks:

"The falconers place themselves in the open country, down wind of the heronry, so that when the herons are intercepted on their return home, they are obliged to fly against the wind to gain their place of retreat....When the heron flies down wind he is seldom taken, the Hawks are in great danger of being lost, and, as the flight is in a straight line, it affords but little sport."[1]

Of all birds a Peregrine is probably preëminent on the wing, the speed attained by it being incredible. My brother has seen both the Golden Eagle and the Peregrine (times out of number) hawking game in Argyllshire, and in his opinion the Eagle, though rapid, is visible comfortably to the eye, while the Peregrine passes like a streak of lightning. Furthermore the quarry pursued by the Eagle (a cock grouse), seemed to be travelling well within himself, like a hare pursued by a lurcher. The same quarry pursued by the Peregrine, on the other hand, goes "all out," and attains a blind velocity like a bullet — instance, a Blackcock which

[1] Observations on Hawking.

shot through a sheet of ¼ inch plate glass into Mr. Henry Evan's drawing room (in the island of Jura), left a clean round hole in the glass, and was picked up inside the room, a crumpled mass of blood and feathers.

To return to the heronry: half of the next day was spent here, but it was found that all the herons were, if anything, more shy than those on the Powder River, although we ascertained that three nests contained three full-feathered birds in each, which had not yet flown. One of these, placed at the extremity of a dead branch free from surrounding foliage, showed clear cut against the sky, and lent itself better to photography than any nest we had seen. Every effort was, therefore, made to obtain a picture of this nest with the young birds standing erect in it, which might even have been accomplished from the ground had they shown themselves a little more complacent. After focusing with an 8 by 10 camera and inserting the plate we retired for three hours in order to restore confidence to the herons if possible. Pleasant it was to lean against a fallen cottonwood by the softly murmuring river, and watch it ripple on the yellow sand where Spotted Sandpipers ran about industriously, or jerked their tails in company with their newly fledged young. The air was full of bird voices; in the trees overhead Arkansas Kingbirds chattered and fluttered, solicitous for the safety of their broods, although the young birds could now fly. Occasionally an excited heron wheeled above them, but I noticed that these audacious flycatchers refrained from attacking their long-legged island comrades. Here was indeed a great variety of bird life: we saw a Belted Kingfisher come to the island and a Bonaparte's Gull fly slowly past, both rare on the Yellowstone. At the expiration of the above-mentioned time we returned to the heronry, but the nestlings still persisted in their squatting attitude and the old birds kept away. When it was sought to make an exposure of the nest from the adjoining tree two of the nestlings flew clean away, but the third remained, and might pass in the resulting photographs for an adult heron incubating her eggs.

On September 24, Lance Irvine, foreman of the Crown W ranch, and T. Hughes Parry were returning from Macrae's ranch where they had been branding foals for Mr. J. H. Price. As they rode up Spring Creek, which empties into Fallon Creek, a flock of large

birds, flying very low, was observed to be approaching from behind. Under the impression that these were early arrivals of the Canada Geese the two men stopped to watch the flock, which then swung round and alighted in two divisions on the open plain. Upon riding close to them it was found that the birds were not geese but herons walking about on the prairie in two parties of eight and fifteen — making twenty-three in all. They were engaged in feeding; it was supposed upon grasshoppers. A high northeasterly wind accounted for the herons flying so low. The conclusions to be drawn are: (1) That this was a body of migrant herons on their first flight from the Yellowstone heronry, the place where they alighted being about fifty miles due south of this nesting site. (2) That herons from a particular heronry do not all go south at the same time; and that the young birds probably do not cover more than fifty miles on the first trip, as shown by the fact that the flock alighted (evidently for food and rest) despite the proximity of the horsemen. (3) That herons migrate by day, and not necessarily by night.

The nests of Great Blue Herons, in Montana, are made entirely of dead cottonwood sticks, without lining of any kind and white-washed by the excrement of the birds. Although at first bulky structures, they are so constantly knocked about by high winds and the trampling of the herons that very few retain their original proportions by the time that the young can fly at two months old. The dimensions of an average nest which I took were: diameter of greatest width across sticks, 3 feet 2 inches; diameter of cavity, 16 inches. As pointed out by Mr. Seebohm, the Great Blue Heron (*Ardea herodias*), and European Blue Heron (*Ardea cinerea*), build their nests by placing sticks around the centre so as to form arcs, differing thus from the Night Heron, and some other species, which arrange the sticks outwards from the centre so as to form radii. The European Blue Heron is very much like the American species in appearance and habits excepting that in the former the tibiæ and border of the wing are white while in the latter they are purplish-cinnamon or rufous.[1]

It would appear that Montana Herons are desirous of placing

[1] Water Birds of North America, by Baird, Brewer, and Ridgway, Vol. I, p. 5, 6.

their nests as near the water as possible which is not the case in Scotland. There are no less than three heronries near the residence of my brother in North Argyll where herons are exceedingly numerous and resident all the year round. He has had unusual opportunities for observing them and has sent me some most interesting notes. He says: "Our herons undoubtedly prefer to build in conifers, always choosing open situations, generally on high ground, and in associations varying from two or three nests to twenty or thirty together."

The second largest heronry within his knowledge "is in very old and very tall larches, high up on the face of a mountain which forms one side of a deep and luxuriantly wooded glen. Here the herons have selected the larch in preference to equally suitable pines at a lower elevation and nearer the mouth of the glen, but, possibly, the immediate proximity to the pines of a populous rookery may have had something to do with the choice. The larch, though deciduous in foliage, is the earliest tree to sprout in spring, and becomes handsomely feathered with green shoots before the herons are seriously occupied with family cares." Herons in Argyllshire pair very early in spring, and my brother has observed young birds hatched out on April 25. He has supplied me with the following account of another heronry in marked contrast to the haunt just described. "A heronry on my brother-in-law's estate in the Island of Jura occupies a deep cup in the bed of a mountain torrent, at the base of a high waterfall which has evidently in the course of ages hallowed out the cup. The nests are here placed on low, scrubby bushes of birch and goat willow, only a few feet from the ground, and easily accessible from the bed of the burn. The sides of the cup are so steep and deep that a person standing on the brink can look down upon the herons nesting below, and splendid observations could be taken but for the difficulty of suitable accommodation on the ground. Above the heronry, at no great distance, is a chain of lakes full of excellent trout, and round about are large herds of wild red deer — this romantic spot being in the heart of the Jura deer-forest."

Though I have never known it to be fired at with any kind of weapon the Great Blue Heron is an extremely shy bird and seems by some instinctive process thoroughly to gauge the killing range of

an ordinary scatter-gun. On the broken winding shores, however, which are characteristic of Montana rivers, often clothed with wood, or buttressed with badland rocks, there is little difficulty in approaching this solitary, meditative bird, who has no friend to warn him, and whose self-absorption at his lonely meal is so complete. He can be descried half-a-mile away and stalked warily from the rear, what time his eager gaze betokens the immediate proximity of some precious stream-borne prey.

It is from this cause, too, that private property is so great a protection to the herons on West Highland sea-lochs. The tourist collector can mark his quarry from the deck of his yacht, but he hesitates to land to achieve its destruction, and herons can rarely be shot from a boat.

THE CATALINA ISLAND QUAIL.

BY JOSEPH GRINNELL.

SIX specimens of quail from Santa Catalina Island, California, present characters constantly different from those of the series of mainland quail examined. While the degree of difference is not great, it requires no straining of the eyes to distinguish them. The differences seem to be significant of insular isolation under the peculiar set of factors which have resulted in differentiating many other species of animals and plants on the same island. It is convenient that the quail also be provided with a name, and I propose the following:

Lophortyx catalinensis new species.

SPECIFIC CHARACTERS.— Similar to *Lophortyx californicus vallicola*, but about 9 % larger throughout, and coloration somewhat darker; similar to *L. c. californicus*, but larger and much less deeply brownish dorsally.

TYPE.— ♂ adult; No. 6134 Coll. J. G.; Avalon, Santa Catalina Island, California; November 25, 1904; collected by J. Grinnell.

MEASUREMENTS.— In millimeters; the difference in dimensions between males and females of *L. c. vallicola* is so minute, that the two sexes are lumped together.

	Sex	Wing	Tail	Culmen	Depth of Bill	Tarsus	Middle Toe and Claw
Coll. Howard Wright	♂	113.5	104.5	10.3	7.0	31.0	38.5
Coll. Howard Wright	♂	116.0	103.5	10.2	7.7	30.1	37.0
No. 6134 Coll. J. G.	♂	119.7	110.0	10.7	8.0	32.0	39.5
Coll. Howard Wright	♀	118.0	105.0	10.3	7.7	30.1	38.0
No. 6136 Coll. J. G.	♀	117.0	104.0	10.9	7.6	30.8	37.3
No. 6135 Coll. J. G.	♀	116.5	103.0	10.6	7.8	31.5	39.0
Average of the above 6 skins from Catalina Is.		116.8	105.0	10.5	7.6	30.9	38.2
Average of 21 skins, both sexes, from mainland of southern California		107.1	95.0	9.8	6.8	29.2	35.1

REMARKS.— The bulkiness of *catalinensis* is at once apparent when one sees it among specimens of the mainland *vallicola*. The tail is particularly long, the rectrices being proportionately broader. The bill is heavier, and the toes and tarsi decidedly stouter. These characters hold equally in the males and females. In coloration *catalinensis* shows a deepening of shades especially on the lower surface. In both sexes the flanks and lower tail-coverts are more broadly streaked with brown; the terminal black edgings of the lower breast feathers are broader, and the light markings beneath are suffused with deeper ochraceous. Especially in the female of *catalinensis* is the lower surface darker than in *vallicola*, due to the encroachment of the dark portions of each parti-colored feather upon the light part. The dorsal surface is not however much browner than in *vallicola* — it is decidedly slaty as compared with the deep bright vandyke brown of *californicus* from the vicinity of San Francisco Bay.

Mr. H. C. Oberholser comments (Proc. U. S. Nat. Mus., XXII, 1900, p. 229) on "one male and one female from Santa Catalina Island. They seem rather darker and more ochraceous than extreme examples of *vallicola*, but are identical with birds from the San Joaquin Valley. The species has probably been intro-

duced from the mainland." No mention is made of measurements. I do not know where the type-locality of *vallicola* is. Nothing more exact has been published than "interior valleys of California," as far as I know. I am using skins from the San Gabriel Valley, Los Angeles County, as typical of *vallicola*.

In 'The Auk' (Vol. XV, July 1898, p. 234) I made the statement that "The 'Quail' is not native on the [Catalina] island, but was originally introduced from the mainland." This assertion I now wish to retract. It *may* be that quail from the mainland have been liberated on the island, as I have been repeatedly informed. But when I followed up these rumors, I never obtained any definite information to confirm them. Moreover, as stated beyond, I now have good reason to believe that quail were on the island before the advent of white men. It seems to be "natural" for the usual observer to conclude that quail could not have been native on the island. For instance, Cooper (Orn. Cal., 1870, p. 550) says: "It is also numerous on Catalina Island, but was probably carried there originally, as a flight of eighteen miles at once would probably be too far for a bird with so short wings." But there are many animals on the island which are undoubtedly native, being of such habits and character that only by natural means can their presence be accounted for. Geologists tell us that evidence points towards a time when the Santa Barbara Islands were a part of the mainland. This would easily explain the origin of their fauna and flora, the components of which are in so many instances slightly differentiated from their mainland representatives. In view of the differences characterizing the Catalina Island Quail it seems to me most probable that they belonged to the original fauna.

On August 16, 1905, I interviewed an old-timer by the name of James C. Johnston, who now lives on his ranch at Cactus Flat, in the San Bernardino Mountains. "Captain" Johnston went to Catalina April 15, 1859, and lived there 21 years. I saw the remains of his old home at Johnston's (Johnsons, on the maps) Harbor on August 31, 1903. Captain Johnston affirmed to me that quail were already on the island when he went there in 1859, and that he and the other sheep-men had always considered them to be native. He never knew of any having been brought over from the mainland. I believed him implicitly, as he told me many

things about the natural history of the islands which coincide in detail with my own observations.

Professor Chas. F. Holder, an authority on the natural history and ethnology of the California coast islands, believes the quail to be native on Catalina Island. He assures me (in a letter dated April 8, 1906) of their constant abundance there from the time of his first acquaintance with the island 21 years ago.

Therefore the characters of *Lophortyx catalinensis*, as here pointed out, appear to be significant of long isolation, rather than of acquisition within a few years.

Pasadena, California.

ISOLATION VERSUS NATURAL SELECTION.

BY LEONHARD STEJNEGER.

In a recent paper in 'The Auk' (XXIII, April, 1906, pp. 161–171) Mr. Hubert O. Jenkins has given a very instructive account of the 'Variation in the Hairy Woodpecker (*Dryobates villosus* and subspecies)', accompanied (p. 163) by a map of the geographical distribution of the various subspecies recognized by him.

In looking at the map I was forcibly struck by the fact that the boundaries of the various forms do not coincide with those of the various 'life zones' commonly recognized by North American zoölogists. The nearest approach to such a coincidence is the range of *Dryobates villosus leucomelas* and the so-called boreal zone. In the United States the other subspecies show a certain agreement with the two main east and west divisions of the transcontinental belts, the humid and the arid divisions of the transition, upper austral and lower austral life zones. It is a curious fact, however, that while the zoölogists do not recognize an east and west division of the boreal belt, the distribution of the woodpeckers in question clearly indicates that the Pacific slope of the continent included in the boreal zone has some forms as markedly separated from the eastern forms as those further south.

Apparently then temperature, as indicative of the life zones, has very little to do with the distribution and differentiation of these races of woodpeckers. On the other hand, the transverse lines which Mr. Jenkins has drawn on his map "separating forms of equal size" in showing a gradual increase of size northward point to thermal influences, although they do not present any special agreement with the lines on the zonal maps.

Nor do the east and west forms find a ready explanation in the humidity or aridity of the climate, as the western form *D. v. harrisi*, which enjoys a climate fully as humid as typical *D. villosus* in the northeastern United States, is the one most removed from it in color characters. It is true that the western forms to some extent correspond to the humid and arid districts of the Pacific slope in as much as the dark underside of the large northwestern *D. v. harrisi* in a general way coincides with the extent of an annual rainfall of over 50 inches. It is also true, that the range of the small southeastern *D. v. auduboni* falls inside the area in the east having a rainfall of over 50 inches, but the latter amount of precipitation is also found over larger areas inhabited by typical *D. villosus*.

As we go south into Mexico and Central America we meet an increasing darkening of the underside through *D. v. intermedius* to *D. v. jardinii*. This darkening is plainly connected with the increasing amount of the annual precipitation which exceeds 50 inches considerably.

We can thus, in a general way, trace the influence of present climatic conditions in the formation of some of these races, in as much as those distinguished by a darkened underside inhabit districts having a yearly rainfall of 50 inches or more. Present temperature conditions apparently play a very subordinate rôle, except that the size of the various forms gradually increases from the warmer to the colder regions, but apart from the fact that this increase in size can only be very indirectly caused by the temperature, the difference in size is not diagnostic of the various forms, that is to say, the northern individuals of each form are larger than the southern ones (see Jenkin's table on p. 171, showing an average greater size of *D. v. hyloscopus* north of 35° N. lat. than south of it), so that the gradual increase in size northward is a gradual increase in the size of the individuals and thus only indirectly of the races.

It is plain then, that of the present climatic factors determining the formation and the distribution of the forms of *D. villosus*, the rainfall is by far more important than the temperature.

If we examine Mr. Jenkins's map further we discover a doubly curved, solid black line running from N. W. to S. E. "separating heavily and lightly spotted forms." East and north of this line we find forms which have the wing feathers spotted with white to the tips, while the races living west and south of the line have these feathers only spotted at the base. Intermediate specimens are found occasionally along this line.

Mr. Jenkins has tried to explain the variations in these birds "through natural selection and the survival of those best fitted to escape from enemies or to obtain food in the particular region that they inhabit," but he does not seem to have much faith in the explanation. As for the spotting, he reasons that the spots "were originally developed for some good service, as for directive markings, etc." The loss of them at the tip he then suggests as due to the protection it would be to the bird to have the folded wings uniformly black so as "to make the bird less conspicuous while climbing up dark colored tree trunks." But he brings down the whole construction very effectively with the following remark:

"Could this theory be absolutely proven we would still have to explain why all of the Hairy Woodpeckers have not developed in like manner. If we draw a geographical line between light and heavily spotted forms this line would in part coincide with the geographical line between the Arid West and Humid East. But I greatly doubt if aridity and humidity have anything to do with the wing spotting.[1] We might say that the more highly developed form has had more enemies and more competition, but such a statement needs yet to be proven."

Mr. Jenkins in offering his explanation labors under one fundamentally erroneous notion, viz., "that the western bird is more highly developed" (p. 169). He speaks also of "the spots on the inner webs and proximal ends of the feathers" as "more persistent." Evidently he regards the eastern forms with the wings spotted to the

[1] He might have added that plainly it has not in this case, since *D. v. harrisi*, which inhabits the most humid region, is also one of the least spotted forms.—L. S.

tip as the original forms, from which the western birds were derived by a reduction of the spots on the distal end of the wing feathers. Just the opposite is the case.

Speaking of the birds in general it may be said that there is an evolutionary tendency towards a uniformly colored plumage as distinct from the dark-and-light (not black-and-white) spotted or striped plumage. This accomplished, the further development tends towards pure white, either as a uniform white plumage or one spotted with pure white. The white spots are not produced by any white coloring matter, on the contrary, they are due to total absence of pigment. Generally speaking they are a degradational development, they betray a structural weakening of the feather. As for the wing feathers this process usually begins at the base of the feathers, a basal white spot being present in many birds although absolutely hidden. A further development of it is the white wing 'speculum' of so many birds. Often it develops still further, but seldom extends to the very tip, unless the whole plumage tends to uniform white, and it is mostly confined to the part of the feather covered by the superposed portion of the next feather. Where the distally increasing whitening of the feather — and we are now coming to the case of the spotted-winged Woodpeckers — does not proceed as a solid white area, but as a series of white spots, the remaining black cross bars have the function of stays or braces. It is easy to understand then why the white spots appear first on the inner webs of the secondaries and last on the outer webs of the primaries or at the tips which extend beyond the plane of the wing when spread for flight.

That this degradation of the feathers in the birds of northern affinities as a rule increases towards the colder regions there can be no doubt, and as for the spotted woodpeckers of the genus *Dryobates* I need only refer to the Siberian and Kamchatkan forms for proof. That this increase in the size and number of white areas is not *directly* attributable to the effect of the cold seems evident (see my Ornith. Res. Expl. Kamtch., 1885, pp. 343–344). Barrett-Hamilton, not long ago, has suggested a theory connecting the absence of pigment with the accumulation of fat in the underlying tissues of the body, but in the woodpeckers at least I fancy it would be difficult to establish such a connection. It seems to me,

however, that perhaps ease of living combined with the cold climate of the North and may be some other less important or more obscure conditions, may account for the phenomenon. It must not be imagined that because the northern birds live in a cold climate they have a particularly hard life. Food is very abundant there, perhaps more so than in the southern latitudes, and the large size of these northern birds may be thus accounted for by the combination of plentiful food and vigorous, energetic exercise necessitated by the cold.

That there is some connection between the more or less heavy spotting and the north-south distribution is very probable. The coincidence of these facts among a large number of species of woodpeckers, especially in Japan, shows this clearly. Let us take a single example from the closely allied genus *Yyngipicus*. Beginning in the Riukiu archipelago with the small dark *Y. nigrescens*, we find, as we go northwards, *Y. kizuki* in Kiusiu and Hondo and finally in Yezo the largest and most spotted of them *Y. seebohmi*, a regular gradation from south to north.

How are we then to explain that the increase of spotting in North America is essentially west-east and not a south-north phenomenon?

We have seen that the present climatic conditions give no clew, but perhaps we may find it in the 'environmental stress' of a previous geological period.

The relation of our spotted woodpeckers to the Old World species of *Dryobates* and the geographic distribution of the latter is such that we must conclude that ours arrived to this continent from eastern Asia, and various considerations make it probable that this immigration took place not later than Pliocene times. We may then assume that previous to the Glacial period there lived in North America a Hairy Woodpecker small of size. The southern specimens probably resembled *D. v. jardinii*, the northern ones were possibly more like *D. v. auduboni*. The advance of the glaciation pushed the woodpeckers southward and in combination with the transgression of the Gulf of Mexico affected a separation of the southern Alleghany region from the western portion of our continent which then as now formed the northern continuation of Mexico. It is well within the bounds of probability that the Hairy Woodpecker which became isolated in the Alleghanian region

belonged essentially to the form which above I have compared to *D. v. auduboni*, and that on the other hand, the one which was forced south in the Sonoran region mostly consisted of scantily spotted southern specimens comparable to *D. v. jardinii*. I feel convinced of the correctness of the hypothesis that it was during this long period of separation that the two main forms, the western and the eastern, finally got established. I am even strongly inclined to believe that by the time of the last retreat of the glacial covering the two forms were so well differentiated that they might be called species rather than subspecies, as these terms are now commonly used. The two now distinct species of Hairy Woodpeckers following the melting ice cap and occupying the forests which gradually covered the reclaimed land finally met along the solid line of Mr. Jenkins's map, assuming a distribution such as we see it at the present day. That the two species which were established through some such separation should intermingle to a considerable extent along their mutual boundary line is quite natural. I leave it to those ornithologists who are more familiar with the forms in question to decide whether the 'intermediate' specimens, where the eastern and western birds come into contact, may not properly be regarded as the result of hybridization. The formation of the three eastern and four western races, chiefly characterized by size, amount of darking of the underside and extent of the white spots, is then subsequent to the primary segregation of the eastern and western species. There is nothing in the quantity or quality of their specialization which contradicts the assumption that they were formed since the glacial period.

The above seems to me to be a much more satisfactory theory as to the origin of the various forms of the Hairy Woodpecker, than the one suggested by Mr. Jenkins. That natural selection at some stage or another in the evolution of these forms, may have exercised an auxiliary influence it is not necessary to deny, but I think there can be but little doubt that 'environmental stress' working on a material possessing considerable plasticity in a certain direction accomplished the 'speciation' of these forms because of their complete *isolation* during an earlier geological period.

SOME NOTES ON INDIANA BIRDS.

BY AMOS W. BUTLER.

Nyctea nyctea. SNOWY OWL.— One reported by Louis A. Test, upon authority of J. Keegan, as having been taken near Washington, Daviess County, Indiana, November 5, 1904.

I saw one in Deschler's Cigar Store, Lahr House, LaFayette, which was procured by Geo. M. Timberlake, from a man who shot it about 15 miles south of LaFayette in the winter of 1901–'02. Beasley and Parr, taxidermists, Lebanon, report that they mounted this specimen in November or early December of 1901. Snowy Owls have been more generally distributed over the State the present winter and more individuals have been reported than ever before since records have been kept.

November 25, 1905, while at Hammond, Lake County, Mr. LeGrand T. Meyer told me that two fine specimens of this bird had been taken near that place a few days before. One of these we saw afterwards in the possession of Mr. Schmid, who mounted it and who also had the other one at the same time in his work room. Mr. Meyer has kindly supplied me with the following data of these, and three other birds of the same species taken in that vicinity:

First: A man by the name of Johnson killed one on November 12, 1905, about a mile and a half southeast of Tolleston, Indiana, in the gravel pits.

Second: Fred Burg shot one on the lake front of Lake Michigan near Indiana Harbor, on November 19, 1905, which is now in the possession of Mr. Louis Freeze of Hammond.

Third: Wm. J. Thompson killed one near Wolf Lake Ice Houses in Hammond, on November 25, 1905. This one was on the top of a telegraph pole when killed.

Fourth: One was killed on Wolf Lake near Lake Michigan, in Hammond, by a person unknown to me, which is now in the possession of Louis Mankowski of this city, which was killed November 23, 1905.

Fifth: At the time it was killed, there was another one with it, which the hunter was unable to secure.

The specimens Mr. Schmid had, were numbers one and four, given above.

Beasley and Parr, Lebanon, Indiana, have mounted quite a number of these birds recently. From information kindly supplied by them regarding specimens in their hands I have been able through extended correspondence to collect some interesting facts regarding this dispersion of these owls over Indiana this winter. They have been reported from the following counties: Allen, Benton, Fountain, Hancock, Johnson, Lake, Marion, Miami, Montgomery, Noble, Shelby, Sullivan, Warren.

H. A. Dinius of Fort Wayne reports that two Snowy Owls were observed on the Godfrey Indian Reservation west of that city, December 22, 1905.

One was shot by Clem Woodhams in Bolivar township, Benton County, November 10, 1905. The same gentleman informs me that one was seen north of Otterbein in that county about December 24, 1905.

One of two owls seen was shot nine miles east of Fowler, in Benton County, November 4, 1905, by a corn husker working for Thomas Eastburn. It was wounded and brought alive to Fowler. The second one was taken afterwards. They are reported to be male and female. They were sent by J. F. Warner of Fowler, to be mounted, who reports on January 4, 1906, another one observed some days before at Earl Park.

J. W. Crouch of Fowler has a Snowy Owl that was killed by Nelson Hendricks five miles west of that place about February 12, 1906.

J. R. Opp has a specimen taken four miles west of Otterbein December 21, 1905. Another was shot near there on December 4, 1905.

One shot November 29, 1905, two miles southeast of Mellott, in Fountain County, by John Whalen, just after dusk, after it had killed two old hens. Mounted for Red Men's Hall at Mellott.

One shot one mile northwest of Fortville, Hancock County, by Ottis Shepherd. Reported by David Fair of Fortville.

John Hammer took a Snowy Owl about six miles south of Franklin, Johnson County. It is now owned by S. B. Eccles.

Gus Habich, Indianapolis, received two of these owls recently. Both were killed about December 1, 1905. One was shot by William Stroble, near Shelby, Lake County; the other by Frank Hoffman, below Shelbyville, in Shelby County, Indiana.

One killed by Isom Kelsey, two and one-half miles southwest of Shelbyville, November 30, 1905.

One killed by John Tucker, four miles north of Fairland, Shelby County, about November 16, 1905. Owned by D. H. Tucker.

One owned by Fletcher M. Noe, Indianapolis, he informs me was taken near Southport, Marion County, Indiana, December 20, 1905. He reports that six or seven have been brought in to him the present fall and winter.

One, a male, killed by Frank Clark in Erie Township, Miami County, December 17, 1905. The next day a female was killed in that vicinity by

Rawley Bunnell. The first one was mounted for the First National Bank, of Peru. Reported by Joseph H. Shirk.

One shot three miles northwest of Linden, Montgomery County, by George Ciderdin, November 22, 1905. Owned by J. M. Hose of Linden.

One killed near Darlington, Montgomery County, November 21, 1905, by N. Royer. Reported by S. G. Kersey.

One is reported by Henry A. Link to have been killed near Avilla, Noble County, Indiana, a few days prior to December 14, 1905.

W. S. Blatchley, State Geologist, has a photograph taken the past fall of a bird of this species in the possession of J. W. Sampson, Farmersburg, Sullivan County, Indiana. Mr. Sampson writes that another was killed at Blackhawk, about six miles east of Farmersburg, about the same time.

John Morgan killed one in Warren County, December 21, 1905.

A fine specimen seen in the window of the Starr Piano Co., Richmond, Ind., was killed by Mr. Edgar Moon near Bowersville, Greene County, Ohio, November 8, 1905. Reported by J. E. Perkins.

Ectopistes migratorius. PASSENGER PIGEON; WILD PIGEON. — Joseph F. Honecker reports seeing a Wild Pigeon with young, near Haymond, in Franklin County, the spring of 1905. There is another record of the capture of a specimen in Shelby County.

Dendroica vigorsii. PINE WARBLER.— C. P. Smith, during the summer of 1904, visited the sand-dunes near Michigan City. There among the pine trees he found Pine Warblers. They were fairly common June 19–23. Though the birds were in full song, he did not find the nest. He describes the song as very similar to that of a Chipping Sparrow, in fact, so similar that he was deceived by it at first. The preceding summer (1903) the same observer, while studying the biology of the State Forest Reserve, at Henryville, saw Pine Warblers three or four times among the pine covered 'knobs.' The last of July he found adults feeding young that were practically full grown. They doubtless nested there.

Pelidna alpina pacifica. RED-BACKED SANDPIPER; AMERICAN DUNLIN.— A specimen taken October 11, 1905, from a flock of shore birds at a pond in Marion County, north of Indianapolis, was presented to me by Philip Baker. This is the first fall record for this vicinity.

Ægialitis meloda circumcincta. BELTED PIPING PLOVER.— A fine group of these birds with four eggs, in the collection of the Chicago Academy of Sciences, was taken at Miller's, Indiana, June 13, 1905 (F. M. Woodruff).

Numenius borealis. ESKIMO CURLEW.— There are few recorded specimens of this rare migrant from Indiana. It therefore is of interest to learn from Mr. J. H. Fleming, Toronto, Ont., that he has one marked Chalmers, Ind., male, April 19, 1890 (?).

Phalacrocorax dilophus. DOUBLE-CRESTED CORMORANT.— Mr. Roman Eichstodt of Michigan City has a specimen taken by him inside the breakwater there, the last of November, 1903. No others of this species were seen.

Sula bassana. GANNET.— A few months ago I was taken to see a bird of this species in the store of Roman Eichstodt, Michigan City, Indiana. It was in immature fall plumage, as determined by the U. S. Biological Survey, to which a photograph was sent. The bird was killed, according to the owner, on Lake Michigan in November, 1904, about two miles from Michigan City. It was said to be unlike anything before seen in that vicinity.

Oceanodroma castro (*Oceanodroma cryptoleucura* Ridgw.). HAWAIIAN PETREL.— A specimen of this rare species, whose distribution seems to be almost world wide, was given to me by Alden M. Hadley, of Monrovia, Indiana. He obtained it from Mr. N. H. Gano, who on June 15, 1902, found it fluttering in a wheelbarrow in his yard at Martinsville, Indiana. He picked up the bird but it soon died. Its stomach was entirely empty and it had evidently died of hunger and exhaustion. The bird was sent to Mr. Hadley, who preserved the skin. It was recognized as a petrel, and the species was kindly determined by Dr. C. W. Richmond of the Smithsonian Institution. Five specimens of this bird, from its collection, were later sent me for examination. The following notes and measurements in inches are given:

Cat. No.	Sex	Locality	Date	Collector	Wing	Tail	Tarsus	Tail
132764	♂	Galapagos	Apr. 4, 1891	C. H. Townsend	6.125	3.250	.937	Slightly forked.
189861	♀	Madeira	Sep. 12, 1902		5.750	3.000	.937	Much worn.
189860		Madeira	Oct. 14, 1902		6.500	3.555	.937	Very slightly forked.
115461		Kauwai, H. I.		Knudsen	5.750	3.968	.937	Nearly square.
154436	♀	Wash., D. C.	Aug. 29, 1893	W. Palmer	6.250	3.125	.937	Nearly square.
		Martinsville, Ind.	June 15, 1902	N. H. Gano	6.000	3.500	.937	

LIST OF THE BIRDS OF LOUISIANA.

BY GEO. E. BEYER, ANDREW ALLISON, AND H. H. KOPMAN.

Part II. — PRELIMINARY SKETCH, CONCLUDED.

(*Continued from p. 15.*)

THE survey of the topographical aspect of Louisiana bird life having been offered in the preceding pages, the introductory matter will now be concluded by presenting the seasonal phases of the avifauna of Louisiana, especially of the southern part of the State.

The main features in the seasonal history of Louisiana bird life will be correctly conjectured from a general knowledge of the breeding and winter ranges of the birds of eastern North America, but there are several peculiar considerations of interest. Preëminent among these are the preponderance of aliens throughout the usually mild winters, the great length of the semivernal period preceding the full course of spring, and the extent of the season of fall migration.

The succession of changes in the status of bird habitation in Louisiana is no less marked than in much more northern regions. Conditions in winter furnish a very convincing proof of this statement. Meteorologically, it is true, the Louisiana winter, especially in the southern part of the State, usually lacks the prime essentials of the season; but speaking from a faunal and floral standpoint, the season is unequivocal. Except for live and water oaks, and pines — the universal evergreens — the arboreal growths are leafless for at least a part of the time intervening between the nominal limits of winter. In many localities the amount of evergreen shrubs is insignificant, and few herbs are perennial. Insect and reptile life is correspondingly dormant. Among the Passeres and nearest allies, the preponderance of winter visitor forms over residents is highly significant. As links between summer and winter bird life, there are practically no forms except a few of the Picidæ and Icteridæ, *Cardinalis*, *Lanius*, *Dendroica vigorsii*, *Geothlypis trichas*, *Parus*, and *Sialia sialis*.

Biotic conditions, especially floral conditions, to be noted in southern Louisiana the first of the year are somewhat perplexing. In point of defoliation and imminence of cold, the winter is just becoming installed, and yet many prevernal indications are to be detected before the middle of the month. Maples and cypresses begin to bloom in the earlier part of the month in the latitude of New Orleans. Tree-toads and even frogs become very vocal if rains come without cold. Very balmy weather frequently occurs within the first week of January. Occasional butterflies, especially *Pyrameis atlanta* and *Callidryas eubule*, possibly hibernants in some cases, but doubtless individuals fresh from the pupæ in many instances, are more apt to be met with than during several weeks past. A few Myrtle Warblers are often in obvious transient progress before the 10th of the month. Yet the ranks of many winter birds are only lately well filled. Robins have about reached their maximum abundance, which they maintain for fully a month longer. Wintering blackbirds, sparrows, kinglets, and Hermit Thrushes do not give the slightest indication of dispersion. The Orange-crowned Warbler, however, which arrives in southeast Louisiana in greatest abundance about the middle of December, is nearing the limit of the time of its greatest abundance in that region. In a normal season it has become inconspicuous by January 20. And this, in fact, is often a decisive date in the season. A second mild spell in January may be expected then, bringing very likely fresh advances of transient Myrtle Warblers, putting the willows into very early leaf, and the elm into bloom, and starting the first flowering of the peach and plum. In pine regions, *Crataegus æstivalis* and possibly one or two other species of *Crataegus* will bloom as early as this, while *Alnus* and *Juniperus* are in flower at least by this time. But the great body of winter bird life, excepting some of the water birds of the lower orders, especially the Anatidæ, is as yet unaffected. Three weeks to a month of weather apt to include a severe freezing spell, are yet ahead. In most respects the growth of the new season is extremely circumspect. Numerous and constant lesser indications of spring are in evidence, and yet substantial vernal progress is extremely slow.

The first few days of February are often notable for rather high temperatures and the appearance of more Tree Swallows than are

commonly to be seen during the winter. A mild spell the latter part of January brings probably the first individuals of this species that have wintered extralimitally. On rather rare occasions the first Purple Martin appears in the earliest days of February. Its arrival is the first prominent incident of migration. Usually however, it does not appear, or is not seen, until the middle of February or even subsequent dates in that month. Its movements are sometimes much upset by very heavy freezes that visit even the southernmost part of the State, as on February 9–16, 1895 (with 10½ inches of snow at New Orleans) and February 13, 1899 (with a min. temp. of 7 degrees at New Orleans). Heavy freezes have not occurred within recent years, if at all, later than February 17. By February 20, the aspect of spring is usually very pronounced in the lowland woods of southeast Louisiana. Flocks of transient Myrtle Warblers are now conspicuous. Robins are beginning to show some decrease; transient Catbirds appear occasionally; in an exceedingly mild and early season, 1893, several Parula Warblers were observed on February 22, but this date is rather extraordinary by comparison with normal dates of arrival. The cypress and late willows leaf out at this time. Cardinals, Tufted Titmice, Mockingbirds, and Carolina Chickadees begin to sing vigorously After this there is small probability of the season's receiving further set-backs.

The first completely vernal weather, all factors considered, comes usually by the 3d or 4th of March. Weather of this kind is established but a day or two before the certain arrival of the Parula and Sycamore Warblers. The first extensive flights of Limicolæ, especially *Tringa maculata*, *Totanus*, and *Bartramia*, reach the coast districts of Louisiana. Yet the migrations are not given very decided impulses for some time longer. The number of migrants in the first half of March seems by no means commensurate with the prevailing temperatures and the rapid growth of plants. Migrational activity during this period is usually most noticeable about March 10. Purple Martins, which become generally distributed, though not common, about March 1, now appear in considerable numbers. Parula Warblers grow common. Night Herons and Little Blue Herons begin to arrive. In a normal season the first Hooded Warbler appears.

Usually a third distinct warm period sets in at the latitude of New

Orleans by March 15 or from one to three days later. Sometimes a delayed second warm period takes its place; so that from March 12 or 13 to March 18 there is almost invariably a period of considerable migration. The regular arrivals are the Prothonotary Warbler, the Blue-gray Gnatcatcher, the Chimney Swift, and the Red-eyed Vireo, though the last is frequently not seen until the next 'wave.' Herons and the Limicolæ increase. White-eyed Vireos become decidedly common, the first individuals that winter extralimitally arriving early in March. Hooded Warblers become rather common, and Parulas increase very decidedly. The bulk of the Robins have left by the beginning of this period, and Golden-crowned Kinglets are not much observed thereafter. Yellow-bellied Woodpeckers grow scarce, and the last Orange-crowned Warbler is seen.

Periods of migration follow each other in rather rapid succession from this time on. There are often three separate 'waves' between March 20 and April 1 at the latitude of New Orleans. Characteristic of the first 'wave', occurring about March 22, is the Orchard Oriole, though the number of individuals is always small so early. The Red-eyed Vireo is a certain arrival at this time, and the Kingbird may be expected. The advance of Tree Swallows becomes general. Prothonotary Warblers are apt to be fairly common for the first time. Hooded Warblers become exceedingly plentiful. The appearance of the first Ruby-throated Hummingbirds ceases to be casual. Gnatcatchers become common. Herons and various species of Limicolæ, especially *Totanus solitarius*, arrive in large numbers. If a second wave follows this in a few days, it is not generally notable except for an increase of most of the kinds, lately arrived. The last 'wave' in March, commonly occurring from March 29 to March 31, is a very important one. Regular arrivals at this time are the Crested Flycatcher, the Indigo Bunting, the Barn Swallow, the Yellow-throated Vireo, the Kentucky Warbler, and the Wood Thrush. Occasionally some of these arrive with the preceding wave. Hummingbirds now become common. Of more uncertain occurrence are the Wood Pewee, the Green-crested Flycatcher, the Summer Tanager, the Warbling Vireo, Swainson's Warbler, and the Yellow Warbler. The last Robins are seen ordinarily at this time; Ruby-crowned Kinglets are common for the last time, and

in song for the first time; Myrtle Warblers are in song also, having begun about a week earlier. White-throated Sparrows are beginning to decrease, though Swamp Sparrows remain plentiful, and the number of Savanna Sparrows is not appreciably affected. Late transient Palm Warblers appear; sometimes they are in song.

Excepting those species whose arrival during the preceding wave is doubtful, a warm spell about April 4 brings few new species, but generally a great abundance of the common kinds arriving during the preceding period. The Yellow-billed Cuckoo is frequently an exception to this rule. Transient Thrashers and Catbirds are present. The first females and the bulk of males of the Orchard Oriole arrive. The bulk of Tree Swallows arrive. The Black-and-white Warbler, the Cerulean Warbler, the Ovenbird, and the Redstart, species not much met with in southeast Louisiana in spring, are perhaps most apt to be seen at this time. Phœbes and Ruby-crowned Kinglets depart. Myrtle Warblers decrease rapidly.

Decidedly summery weather, sometimes sharply separated from the preceding period by a fresher spell, is usual by April 10 or 12. When the Yellow-billed Cuckoo has not appeared earlier, it is practically certain to be seen by this time. The Nighthawk arrives, and in pine regions, the Chuck-will's-widow. An important arrival in the fertile alluvial regions of southeast Louisiana is the Yellow-breasted Chat.

Subsequent to this time, warm and summery weather prevails, and diurnal migrational activity is not obvious *except when the weather freshens.* From two to three of these cooler periods are likely to occur in the last half of April. Usually the most marked is that occurring on or about April 20. Notable species forming the 'waves' at this time are the Baltimore Oriole, the Scarlet Tanager, the Rose-breasted Grosbeak, the rarer thrushes, and the late transient warblers, especially of the genus *Dendroica.* (See Kopman, Auk, Jan., 1904, pp. 45–50.) The maximum abundance of Barn Swallows is reached at this time, and the first Black-throated Buntings are seen.

Sometimes in place of the diurnal appearance of migrants after April 20, and sometimes in connection with it, occur exceedingly heavy nocturnal flights on hot nights with electric storms.

As far as transients are concerned the sequence of migrational

events in southern Louisiana is of much greater uncertainty towards the end of the season than earlier. Several species, however, show great consistency in their movements at this season, and this is particularly true of departing winter visitors. The White-throated Sparrow and Myrtle Warbler nearly always depart between April 22 and April 27. The House Wren departs a week to ten days earlier as a rule. The Rusty Blackbird, Savanna Sparrow, Swamp Sparrow, and American Pipit leave in the first week of May. The departure of these species marks the practical conclusion of the spring migration. The Bobolink, the Rose-breasted Grosbeak, and late warblers and thrushes, lingering sometimes for a day or two of warm weather after a fresh spell about May 1, will depart suddenly in a body. The Redstart and Bay-breasted Warbler, however, have been seen as late as the middle of May, and the Wilson's Thrush and Catbird have been noted at New Orleans equally late.

Although the nesting period in southern Louisiana represents almost the extreme extension of the breeding season in the United States, there are only two months, from about May 15 to about July 15, when other phases of bird life are not mingled with it. By the latter date, Yellow Warblers are beginning to move into southern Louisiana, from which they are absent as nesters. With them, or closely following them, come Black-and-white Warblers, and occasionally the Cerulean Warbler. Considerable flights of *Tringa maculata*, *Totanus*, and *Bartramia* reach the coast by July 15 or 20. Though the hottest part of the summer is beginning, the nights and early mornings are frequently fresher with light northerlies. By July 25 these conditions are often pronounced, so that the number of Yellow Warblers increases rapidly, Black-and-white Warblers become fairly common, and even the first Redstarts arrive.

In connection with the brevity of the uninterrupted breeding season in Louisiana, the behavior of the Tree Swallow is interesting. While this species certainly does not breed in the southern section of the State, even assuming that it may breed elsewhere in Louisiana, it reappears near the coast by July 20 or earlier. As it may be observed at New Orleans in the spring sometimes as late as May 20, it is thus about the last species to leave, and one of the first to

return. The Barn Swallow reappears with great regularity in southern Louisiana during the first week of August, frequently on the 3d or 4th. By this time migrants have become decidedly numerous and very active. The Louisiana Water-thrush, a species that does not breed in the low coastal regions of Louisiana and Mississippi, appears fully this early. Redstarts grow common. A little later, as a rule, the Worm-eating Warbler, whose breeding range in Louisiana corresponds closely with that of the Louisiana Water-thrush, begins to arrive at the coast. Species with much more northern breeding ranges may also reach the Gulf Coast district before the middle of August. And yet the month from July 15 to August 15 is the most depressing of the heated term. After the 15th of August, day winds from the north are not uncommon, and a decidedly autumnal aspect in the weather is not infrequent during the next ten days. Kingbirds now appear in those sections of Louisiana where they are uncommon as nesters, and, in fact, become very much more abundant in all sections. Barn Swallows are even more plentiful than earlier in the month. Orchard Orioles, which are hardly common after August 1, now decrease very rapidly; Gnatcatchers are likewise rather scarce; in the pine districts the Chuck-will's-widow, and the Fork-tailed and Mississippi Kites disappear almost entirely. The last week in August is characterized by heavy rain storms and distinctly autumnal weather following. The first transient Maryland Yellow-throats now appear, while the full tide of Yellow Warbler travel is past. It is not unusual to find the first Traill's or Least Flycatchers, and transient Wood Pewees are leaving in considerable numbers. By this time or earlier, the first Bobolinks and Soras are found in the marshes of the southern part of the State, where Black Terns and continually increasing flocks of Limicolæ are assembling. Waterthrushes of both species are now very common. The transient movement of Summer Tanagers begins now, or even somewhat earlier.

While migratory movements are almost continuous from this time on, it is nearly the middle of September before any fresh arrivals are recorded in southeast Louisiana. The 15th of the month, however, is signalized by weather that is autumnal in almost every particular, and the full course of the fall migration is immediately under way. Characteristic arrivals are the Mag-

nolia, Chestnut-sided, and Blackburnian Warblers, and the Wilson's Thrush. About a week later, a much heavier 'wave' follows, bringing the first Olive-backed Thrushes, many Catbirds, Black-throated Green and Tennessee Warblers, and transient Indigo Buntings in large numbers. The Kingbird is not often seen after this period of migration. Apparently the only winter visitor to arrive with this 'wave' is the House Wren. But while the passage of transients continues unabated for several weeks yet, the coming of a considerable number of winter visitors is not delayed much longer. Savanna and Swamp Sparrows and the Phœbe arrive very early in October, if not before. White-throated Sparrows, Myrtle Warblers, Winter Wrens, and both Ruby-crowned and Golden-crowned Kinglets should be expected at New Orleans almost if not quite by October 15. The presence of these species, however, may not be obvious until the occurrence of considerably fresher weather about October 20. The American Pipit arrives within a few days later. The Red-eyed Vireo and Wood Thrush are now seen for the last time. Of transient warblers, the Black-and-white, the Bay-breasted, the Blackburnian, and the Chestnut-sided, are seldom seen later than October 15, while the Worm-eating and Yellow Warblers always depart by that date. But important waves of the Black-throated Green Warblers may occur after October 20, while the Parula, Tennessee, Magnolia, and Hooded Warblers, and the Redstart remain until November 1 or later, which is also the time of departure of the Yellow-billed Cuckoo, Nighthawk, Chimney Swift, Ruby-throated Hummingbird, and Wood Pewee.

After the last transients have left there are but few winter visitors to arrive. The Robin, however, is a species of which little is seen until about the middle of November, and Rusty Blackbirds scarcely arrive earlier than that. The Goldfinch, however, has generally come to southern Louisiana by November 15, and the Orange-crowned Warbler by November 20. With White-throated Sparrows arrived in their full numbers, and with the first decidedly cold weather commonly occurring about this date, the status of winter bird life is practically complete, though Robins, Blackbirds, and occasionally a few other species show continued increase until after Christmas.

(*To be continued.*)

UNUSUAL ABUNDANCE OF THE SNOWY OWL (*NYCTEA NYCTEA*).

BY RUTHVEN DEANE.

DURING the past winter of 1905–6, we have again been visited with an unusual abundance of Snowy Owls. I called attention to this flight in a short note published in 'The Auk' for January, 1906 (p. 100), but at that time I had been unable to obtain sufficient data on the subject. During December, January, and February I received records of some eight hundred specimens from localities scattered from Nova Scotia west to Nebraska and from Manitoba south to Missouri, showing that in this territory, at least, the flight had been quite general. As to the cause of these periodical incursions we have not much more information to enlighten us than we had during their abundance in the winters of 1901–2.[1] The weather during these visits has not been unusually severe and the temperature of the past season was one of marked mildness and considerably above the normal point in most localities. There seems to be little doubt that a scarcity of food must influence these southward movements. In some favorable localities, where in former years these owls were conspicuously represented, this past season but few, if any, have occurred. I have had to rely largely for my information upon the taxidermists who have received them for preservation, and to them I take this occasion to express my obligations, as well as to all others, for their kind assistance.

NOVA SCOTIA.

Mr. J. W. Bouteillier, Marconi Wireless Station, Sable Island, Nova Scotia, writes under date of April 6, 1906, as follows: "For the last three winters we have noticed Snowy Owls here in greater abundance than ever before. In the winter of 1902–3 there were

[1] "The Auk," Vol. XIX, July, 1902, pp. 271–283.

three or four dozen on the island, but the past winter we have had more than usual." Sable Island is about eighty-six miles off the coast of Nova Scotia, the nearest mainland.

Mr. Harry Piers of the Provincial Museum, Halifax, N. S., writes under date of Feb. 5, 1906, that there was a noticeable migration of these owls in the vicinity of Yarmouth, N. S., between the 10th and 20th of November, 1905, and that twenty-four specimens had been received by the taxidermists of that city. He also reported some twenty specimens that had been taken near Halifax. During the flight of 1901–2 but few were reported in these localities.

NEW BRUNSWICK.

Mr. Turner Ingalls, Jr., keeper of Southwest Harbor Light Station, Grand Manan, N. B., informs me under date of Jan. 20, 1906, that twenty-six Snowy Owls had been seen on the island, and many of these had been shot during December, 1905. During the flight of 1901–2 Mr. Ingalls observed only about half this number.

Mr. Howard McAdams of St. Stephen, N. B., writes under date of Dec. 20, 1905, that he had received six Snowy Owls up to that time, but had heard of a number of others having been observed and killed. His specimens were received between Nov. 15 and Dec. 14, 1905.

Mr. Miles D. Emack, taxidermist, Fredrickton, N. B., writes under date of Jan. 16, 1906: "Since we have been in business we have never seen so many Snowy Owls. We have so far this season received twenty-nine, and they appear to be all over the Province. Last winter we received none, but four years ago there were plenty of them. In many cases they were reported as found in pairs. There were but few that were conspicuously white, the majority being quite gray."

PROVINCE OF QUEBEC.

Mr. C. E. Dionne, of Laval University, Quebec, in a letter written Jan. 7, 1906, informs me that Snowy Owls have been quite abundant all the season. About fourteen specimens had been sent in,

—one from Esquimeaux Point late in September, 1905, one from Kamomraska, and several from localities from fifty to one hundred miles from the city, while others were killed in November at near by points. One specimen had been brought in badly soiled by soot. It had been killed with a stick, having descended the chimney into a room. It is presumed that while perching on the chimney top, it had involuntarily fallen into the flue. In a later letter from Mr. Dionne, dated Feb. 15, 1906, he writes that he is still receiving specimens.

Mr. Napoleon A. Comeau, Godbout, P. Q., writes under date of March 19, 1906, that the migration of Snowy Owls the past winter did not compare with the numbers which visited them in the winter of 1901–2. The first one noted was on Oct. 27, 1905, and since that date some had been in evidence most of the time. He shot one specimen on March 17. One man at Pointe de Monts, P. Q., had killed about forty since their arrival in the fall. Mr. Comeau states that within a radius of twenty miles from Godbout about one hundred and fifty of these owls had been killed, and as there was no migration of murres or dovekies this year, the want of this food supply may account for their non-appearance in as large numbers as on previous flights. Some of the stomachs examined by Mr. Comeau contained portions of the red squirrel, northern hare, mice, ptarmigan, and the Long-tailed Duck (*Harelda hyemalis*), and one had some remains of a musk-rat; there were also some seeds in the crop, but he presumed these were from some bird whose crop he had swallowed. Mr. Comeau writes that there was a moderate migration of ptarmigan the past winter.

PROVINCE OF ONTARIO.

Mr. J. H. Fleming of Toronto, Ont., informs me, under date of Jan. 2, 1906, that there had been no unusual migration of Snowy Owls in that section and he could only report records of five, all taken near the city at dates between Nov. 13, and Dec. 12, 1905. It is rather surprising that the present flight should have skipped this territory, for during the previous incursion of four years ago, considerably over one hundred were killed and observed in Toronto and vicinity.

Mr. P. A. Taverner of Detroit, Mich., writes that he saw one of these owls on Oct. 27, 1905, on Point Pelée, the most southern point of the Province, projecting into Lake Erie.

PROVINCE OF MANITOBA.

Mr. George E. Atkinson, taxidermist, Portage la Prairie, Man., writes the following interesting communication under date of Dec. 12, 1905: "Snowy Owls are very abundant all over Manitoba and the new Province of Saskatchewan this season. I have already received upwards of thirty specimens for mounting, and they are still coming in from every direction. They made their appearance about the first freeze-up, early in November and have since been generally reported. The number I have received can only be considered a small percentage of those about, as we have fortunately educated our people to protect rather than destroy these birds, and they are seldom killed save for preservation. I have had several opportunities to see these owls, while driving through the country. I have had a great many offered for sale and inquiries from many people stating that if wanted they were available. I have, however, purchased none, as I have no demand. The males seem to predominate, about 7 to 1, over the females, in number, while the number of maturer males is about 3 to 5 of immature or young plumaged birds. All the females, so far, are very dark colored. My specimens were received from Oxbow, Forget, Wolesby, Alameda in Saskatchewan, and Neepawa, Alexander, Brandon, Pipestone, Plumas, Westbourne, and generally over the Portage plains in Manitoba. I did not make any particular notes or dates of their receipt because it is to us only a periodical event, since every two or three years these birds become exceedingly abundant. As an evidence of what we could do I can only note that in one of these seasons (1886) I sought and bought all that were available and handled over one hundred birds from Portage district alone within three months, having seventy-two on hand at one time, all my own, and credited one man with securing nineteen from his own farm in two months. This proceeding has, however, been terminated and though they are equally numerous at some seasons, they are never slaughtered to any extent."

Mr. Alex. Calder, taxidermist, Winnipeg, Man., writes under date of Dec. 15, 1905: "We have been receiving a large number of Snowy Owls for the last two months. They are passing this way in large numbers, and are still coming in. Most of them have been shot within one hundred miles of Winnipeg, west and northwest." Again under date of Dec. 23, 1905, he writes: "Regarding the flight of Snowy Owls, we have had about one hundred sent in to be mounted, and have refused to purchase a number. They were never so plentiful. We are receiving letters every day from people wanting information as to the cost of mounting, or value of the owls shot."

MAINE.

Mr. Walter Hinds, taxidermist, Portland, Me., writes under date of Jan. 13, 1906, that he had received over fifty Snowy Owls this season, five having been received at one time from Richmond Island, off Cape Elizabeth, Me. (the Richmond Island record was given in 'The Auk' for Jan. 1906, p. 100), but the majority were killed along the coast between Portland and Harpswell, Me. A few were sent from Ashland, Fort Kent, and Masardis, in Aroostook Co., Me. One specimen examined contained the remains of fish.

Mr. Frank L. Colton, keeper of Petit Manan Light Station, Me., under date of Jan. 22, 1906, writes that the Snowy Owls were first seen this season about Nov. 15, 1905. During the first week seven were observed scattered over the island. After that date they were usually seen in pairs up to Dec. 17, 1905. About twenty-five were seen in all, nine of which were shot and sent to be mounted.

Mr. Wm. F. Stanley, keeper of the Great Duck Island Light Station, Me., writes me under date of Jan. 5, 1906, that there had been a number of Snowy Owls the present winter on the island. He did not, however, inform me how they compared in numbers to previous seasons when they were abundant. Mr. S. L. Crosby, taxidermist, Bangor, Me., writing under date of Jan. 5, 1906, states that the present flight seemed to be over, as he had not received any Snowy Owls for a week. About forty-five had been received, mostly from the seacoast and in the vicinity of Petit Manan, a

few having come from as far inland as the Rangely Lakes. He reports all the birds as fat and in good condition.

Capt. Herbert L. Spinney, keeper of Sequin Light Station, Me., writes under date of Dec. 11, 1905, as follows: "November 15, the wind blew very hard from the northwest and continued from that quarter for a number of days, and was quite cold. On the morning of the 18th I saw a Snowy Owl, which I shot. In the evening at twilight of the same day, I saw another, which I also secured and when returning to the house saw another poising in the air over my hen-pen. On the 20th another was taken during the forenoon by a gunner who visited the island and in the afternoon I took still another. On Dec. 3, I observed two, one of which I took. I also received a specimen taken at Georgetown, some four miles from the station. They seemed to be in pairs, those which I shot representing three males and three females. Of the four which I have skinned, two had nothing in the stomach, but were in good condition. Of the other two, one contained a small roll of hair, from a mouse I should judge, and the other contained the feathers, legs and feet of a small gull which I identified as those of *Larus philadelphia*. The head and bill were missing, though all the wing feathers and bones were among the remains."

Mr. Robt. W. Bazin, Malden, Mass., reports one specimen from York, Me. Mr. Wm. Cooper, taxidermist, Milo, Me., writes under date of Dec. 24, 1905, that two specimens, received about Nov. 30, 1905, were very fat, while one taken near Milo, Nov. 18, 1905, was very thin and swarming with parasites.

Mr. G. H. Hoxie, taxidermist, Foxcroft, Me., writing under date of Jan. 4, 1906, states that there are quite a number of Snowy Owls in his section. He had received four for mounting which were killed between Dec. 20 and 30, 1905. Mrs. W. R. Gifford of Skowhegan, Me., writing Dec. 19, 1905, reports three having been received from Skowhegan, Athens, and Cambridge, Me., between Nov. 20 and Dec. 11, 1905. Mr. C. R. Combs, of Belfast, Me., received one on Nov. 20, 1905, killed at Ilesboro, Me., and Mr. Homer R. Dill of Gardiner, Me., writes Dec. 11, 1905, that he had received five or six of these owls in the previous three weeks. The average mean temperature at Portland and Eastport, Me., for November and December, 1905, was 32.28°.

NEW HAMPSHIRE.

Dr. Charles W. Townsend, Boston, Mass., under date of Feb. 15, 1906, informs me that three Snowy Owls were killed at Hampton, Nov. 24, 1905.

VERMONT.

Mr. W. P. Conger, taxidermist, Burlington, Vt., writing under date of Jan. 23, 1906, gives me the following data regarding Snowy Owls which he has received this season, all killed in Vermont: South Hero, Nov. 20, 1905, one; North Hero, Nov. 24, 1905. one; Colchester, Nov. 28, and Dec. 22, 1905, two; Orwell, Jan. 23, 1906, one; Shelburne, Dec. 18, 1905, one; Burlington, Dec. 22, 1905, one; Albany, Dec. 27, 1905, one.

The mean temperature at Burlington, Vt., for Nov., 1905, was 36.05°.

MASSACHUSETTS.

Mr. M. Abbott Frazar, Boston, Mass., writing under date of Dec. 2, 1905, informs me that he has received for mounting about forty Snowy Owls. The birds were received between Nov. 23, 1905, and Jan. 1, 1906. While a few were sent from Grand Manan, the majority came from points along the sea coast from Newburyport to Nantucket.

Dr. Chas. W. Townsend, Boston, Mass., under date of Feb. 15, 1906, gives me the following records:

Two seen by himself in the Ipswich dunes, on Nov. 5, 1905, and Feb. 11, 1906; five shot in the Ipswich dunes, Nov. 25, 1905; one seen near Salem, Jan. 1, 1906. At different dates during November and December, 1905, and January, 1906, a gunner from Newburyport shot nineteen specimens, most of them being taken on Plum Island, off Ipswich. Three were shot at Nantucket, Mass., Dec. 1, 1906, and one at Wayland, Mass., Dec. 2, 1905.

Mr. Everett Gordon, taxidermist, Lynn, Mass., on Dec. 13, 1905, reported one from Nahant, Mass., taken Nov. 22, 1905; one from Chatham, Mass., taken Nov. 13, 1905; and one from Gloucester, Mass., taken Nov. 23, 1905.

Mr. Robt. W. Bazin, Malden, Mass., on Jan. 11, 1906, reported a specimen killed at Lakeville, Mass.

Angell and Cash, taxidermists, Providence, R. I., under date of Jan. 25, 1906, sent me the following data of specimens which had passed through their hands.

Nov.	20,	1905,	♂ Fall River, Mass.	Dec.	8,	1905,	♂ Nantucket, Mass.
"	20,	"	♀ Monomoy Pt., Mass.	"	19,	"	♀ Nantucket, Mass.
"	28,	"	♂ New Bedford, Mass.	"	21,	"	♂ New Bedford, Mass.
Dec.	1,	"	♀ Nantucket, Mass.	"	23,	"	♀ Monomoy Pt., Mass.

Mr. Owen Durfee, Fall River, Mass., writing under date of Feb. 21, 1906, states that one Snowy Owl was killed at Marthas Vineyard, Mass., in December, 1905, and five more in February, the last one seen being on Feb. 7, 1906.

The mean temperature at Boston, Mass., for November, 1905, was 41.06°; for December, 1905, 35.01°.

RHODE ISLAND.

Mr. Harry S. Hathaway, Providence, R. I., on Dec. 5, 1905, reported four Snowy Owls taken at Newport, R. I., Nov. 16 and 18, 1905, and three at Warren, R. I., at about the same date. (This record was included in 'The Auk' for January, 1906.)

Angell and Cash, taxidermists, Providence, R. I., have, at my request, very kindly kept careful records of all the Snowy Owls which have passed through their hands between Nov. 18, 1905, and Jan. 1, 1906. The following were killed in Rhode Island.

Nov.	18,	♂, Wickford.	Dec.	6,	♀, East Greenwich.		
"	18,	♂, Narragansett Bay, near Providence.[1]	"	12,	♀, Portsmouth.		
"	21,	♀, Block Island.[2]	"	12,	♂, Newport.		
"	27,	♀, Newport.[3]	"	14,	♂, Portsmouth.		
"	27,	♀, Newport.	"	14,	♂, Situate.		
"	28,	♀, Prudence Island, Narragansett Bay.	"	19,	♀, Block Island.		
			"	19,	♀, Point Judith.		
"	29,	♀, Newport.	"	20,	♀, Newport.		
Dec.	1,	♀, Sachnest Point.	Dec.	21,	♀, Seaconnet Point.		
"	1,	♂, Seaconnet Point.	Jan.	1, 1906,	♀, Woonsocket.		

[1] Contents of stomach, pellets of rat fur and bones.

[2] Contents of stomach, breast feathers of Black Duck and small quantity of dark colored flesh.

[3] Contents of stomach, entire rat about half grown.

Where no mention is made of the contents of stomach it was empty or not examined.

The mean temperature at Providence, R. I., for Nov., 1905, was 41.04°; Dec., 1905, 34.06°.

CONNECTICUT.

Angell and Cash, taxidermists, Providence, R. I., have given me the following data of specimens received by them from Connecticut.

Nov. 20, 1905, ♀, New London, Conn.
" 28, " ♂, " " "
" 28, " ♀, " " "
Dec. 30, " ♀, " " "

Mr. P. D. Stannard, taxidermist, Norwalk, Conn., informs me of one specimen taken at Norwalk, Conn., Dec. 15, 1905. He also writes that he has heard of a number of others having been taken.

In a letter from Mr. James J. Hill, New London, Conn., dated March 10, 1906, he refers to a Snowy Owl having been seen in New London harbor, Conn., and to another that was captured in Niantic, Conn., during the present season.

NEW YORK.

Mr. James G. Scott, keeper of the Montauk Light Station, Montauk Point, L. I., writes me under date of Jan. 11, 1906, that about ten Snowy Owls were seen in his locality and that he shot four of them between Nov. 3 and 19, 1905. He reports that they appeared about a month earlier than he has seen them in former years.

Mr. A. M. Church, taxidermist, Boonville, N. Y., writes under date of March 3, 1906, that there had been a very unusual flight of Snowy Owls during the winter. Fifteen specimens had been sent to him, and he could have secured many more if he had needed them. Those that passed through his hands were taken in a rich farming district within three miles of town. The sexes were about evenly divided. Mr. Church states that there were still a good many about the country, and that there had been an unusual abundance of field mice.

Mr. James H. Hill, New London, Conn., writes under date of March 10, 1906, as follows: "There has been another unusual influx of Snowy Owls the past season (1905), no less than nineteen having been captured on Munnatawket, or Fisher's Island, Suffolk County, N. Y., and two more were seen but eluded capture. One was also taken by the lighthouse keeper of Little Gull Island. One was taken just in time by an indignant duck hunter to save his decoy duck. Another was seen at the same time, but escaped. The first specimen was taken Nov. 20, and the last Dec. 28, 1905. Hares were as usual the *pièce de résistance* of the Fisher's Island Nycteas." In the flight of 1901–2[1] Mr. Hill sent a report of fifteen Snowy Owls which had been shot on this island and referred at that time to the abundance of hares being a great attraction for these northern visitors.

Mr. Thos. Rowland, taxidermist, New York City, writes that he received four specimens from Long Island in Dec., 1905, and had had a number offered for sale. Mr. Fred Sauter, taxidermist, New York City, informs me that he has received a few specimens which were in good condition. Dr. Wm. C. Braislin of Brooklyn, N. Y., reports a specimen from Rockaway Beach, killed about Dec. 1, 1905. Mr. Edward Neal, taxidermist, Rochester, N. Y., reports receiving three Dec. 19 and 20, 1905, all from Monroe Co., N. Y., and Mr. G. W. Altman, taxidermist, Buffalo, N. Y., received two from Niagara River, Nov. 25, 1905.

The mean temperature for New York for November, 1905, was 35.06°; for December, 1905, 29.07°.

PENNSYLVANIA.

Mr. Louis Weber, taxidermist, Philadelphia, Pa., writes me under date of Jan. 31, 1906, that he had received nine Snowy Owls taken in the city and near by points and one taken at Chester, Pa. He had also received thirteen from Winnipeg.

Mr. John Clark, Erie, Pa., reports one taken south of the city on Nov. 25, 1905.

[1] Auk, Vol. XLX, 1902, p. 276.

OHIO.

Mr. W. W. Woodruff, taxidermist, Cleveland, O., informs me that these owls appeared earlier this season than in previous years. He had received four specimens, two of each sex, between Nov. 20 and 25, 1905.

Mr. E. L. Mosely, Sandusky, O., writes under date of Feb. 3, 1906, giving the following records which had come to his notice: one from Marblehead, O. ; one from Port Clinton, O.; and one from Put-in Bay, O., all taken within twenty miles of Sandusky, between Nov. 21 and 27, 1905.

Prof. Lynds Jones, Oberlin, O., writing under date of Feb. 10, 1906, reports the following records. Five taken in Ashtabula Co., one in Lake Co., six in Mahoning Co., and six received by a taxidermist in Columbus, from localities south of that city, no data for these records being given. The mean temperature for Ohio for November, 1905, was 39.06°.

MICHIGAN.

Mr. Peter Lepp, taxidermist, Saginaw, Mich., writes me that he received fifteen Snowy Owls between Nov. 20 and Dec. 28, 1905. Referring to the last large migration in 1901–2, he stated that he had sixty-two specimens in his show window at one time.

Mr. Fred. Kaempfer, taxidermist, Chicago, Ill., received two specimens from Ironwood, Mich., Oct. 31, 1905.

Mr. Hugo Englehardt, taxidermist, Iron River, Mich., received five specimens, all from Iron Co., Mich., during the late fall of 1905, and Mr. W. H. Kress, of Cheboygan, Mich., received three.

Mr. Lou J. Eppinger, taxidermist, Detroit, Mich., under date of Feb. 5, 1906, writes that he had received some ten specimens from the vicinity of Detroit, two from the Upper Peninsula, Mich., and several from Iowa and the Dakotas. He stated that around Detroit this flight did not compare as to numbers with the one a few years previous.

M. P. A. Taverner of Detroit, Mich., under date of April 18, 1906, reports late records of three Snowy Owls, as follows: One

killed at River Rouge (near Detroit), Mich., March 27, 1906; one small light colored bird, killed on Saint Claire Flats, April 1, 1906; and one very large bird, also killed on Saint Claire Flats, April 5, 1906.

Mr. F. H. W. Bailey, taxidermist, Marquette, Mich., writes me that he had only received a single specimen, and that he had not heard of any others having been seen. He reports that during the flight of 1901–2 they were very abundant in his locality.

The mean temperature for Michigan for Nov., 1905, was 35.01°; for Dec., 1905, 28.04°.

WISCONSIN.

Mr. Albert Nemec, taxidermist, Cable, Wis., writes under date of Dec. 12, 1905, that he had received eight Snowy Owls from Bayfield and Washburn Counties, also a single specimen from Eau Claire. They were all sent in between Nov. 30 and Dec. 12, 1905. One killed close to the town of Cable was in very white plumage.

Mr. E. D. Ochsmer, taxidermist, Prairie du Sac, Wis., received two specimens from Sumpter, Wis., Nov. 17 and 22, 1905, and one from Prairie du Sac, Wis., Nov. 10, 1905. One specimen was nearly white in plumage, but all were very poor in flesh. Mr. J. N. Clark, taxidermist, Meridian, Wis., reports one specimen shot in that town Oct. 28, 1905.

The mean temperature for Wisconsin for November, 1905, was 34.04°; for December, 1905, 24.01°.

MINNESOTA.

Mr. T. J. Storey, taxidermist, Duluth, Minn., writing under date of Dec. 19, 1905, states that the Snowy Owls usually appear about Oct. 20, and some remain until the approach of spring. He reports them as very abundant this winter, and up to Dec. 19, 1905, he had received thirty-two for mounting. About a dozen had been killed in the city.

Mr. H. W. Howling, taxidermist, Minneapolis, Minn., under

date of Jan. 17, 1906, writes that he had received fifty-seven Snowy Owls in the past four weeks, which was more than the receipts for the past three years together. These owls were sent in from points in the western, northwestern, and southern parts of the State.

Mr. W. A. Deggeller, taxidermist, Stillwater, Minn., writes that he had received four specimens up to Jan. 9, 1906, from Watertown, St. Paul, and Withrow.

Mr. Julius Brandt, Jr., taxidermist, New Ulm, Minn., received four specimens from Martin County, near the Iowa border, previous to Dec. 23, 1905.

Mr. Albert Boehm, taxidermist, La Crosse, Wis., under date of Dec. 19, 1905, reports having received three Snowy Owls from Minnesota, — one from Lake City, early in November, one from Harmony, Nov. 24, and one from Wyoming, Dec. 10.

The mean temperature for Minnesota for Nov., 1905, was 33.01°; for December, 1905, 20.06°.

SOUTH DAKOTA.

Mr. Otto Munson, taxidermist, Custer, S. Dak., received one Snowy Owl on Dec. 16, 1905, which had been taken at Edgemont, S. Dak., and Mr. Julius Brandt, Jr., of New Ulm, Minn., received three from points in South Dakota prior to Dec. 23, 1905.

NEBRASKA.

Mr. J. W. Elwood, manager of the Northwestern School of Taxidermy, at Omaha, Nebr., writes under date of April 9, 1906, that he had received more Snowy Owls for mounting during the past winter than ever before, the flight having been exceptionally large. From twenty-six to thirty were received, principally from western Nebraska and the Dakotas, while a few were from Iowa and Minnesota.

Mr. Myron H. Swenk, Lincoln, Neb., writes under date of Jan. 10, 1906: "I have received within a few weeks a specimen of Snowy Owl from Ulysses, Butler Co., shot Dec. 8, 1905, and have records of a specimen from Crawford, Sioux Co., two from Omaha,

Douglas Co., and of others from Idaho, Iowa, and Wisconsin, showing the flight to be general over this middle western country. All these were taken in November or early December."

Mr. John A. Lord, taxidermist, Portland, Me., informs me that while in Omaha, Neb., in December, 1905, he saw about ten Snowy Owls in one taxidermist's store, which had been recently received.

IOWA.

Mr. Wm. White, taxidermist, Rolfe, Iowa, writes that he received two Snowy Owls which were killed a few miles from that city about Dec. 1, 1905.

MISSOURI.

Mr. Otto Widmann, St. Louis, Mo., writes that Frank Schwarz, taxidermist, St. Louis, Mo., had received a Snowy Owl, female, which was shot from a stable roof at Wellston, Mo. Mr. Widmann also informs me that a Mr. Johnson observed two specimens in Jasper Co., Mo., near the Kansas border on Jan. 23, 1906. One of them was shot.

The mean temperature for Missouri for November, 1905, was 30.08°; for December, 1905, 33.03°.

INDIANA.

Mr. Amos W. Butler, Indianapolis, Ind., under date of Jan. 20, 1906, sends me a list of the Snowy Owls which have been observed and killed in various parts of the State, as follows.

Lake County: 4 reported by LeGrand T. Myer, Hammond, in November, 1905.

Benton County: 1 shot in Bolivar township, November 10, 1905; 1 seen about Otterbein about November 24, 1905; 1 of two seen, was shot nine miles north of Fowler, November 4, 1905, and the other was taken afterwards.

Earl Park: On January 4, 1906, there is a report of one observed some days before at Earl Park. J. R. Opp has a specimen taken four miles

west of Otterbein, the latter part of December, 1905. Another was found in the same vicinity about three weeks before.

Fountain County: 1 was shot November 4, 1905, two miles southeast of Mellott.

Lake County: 1 was shot about December 1, 1905, near Shelby.

Miami County: 1 male was killed in Erie township, December 17, 1905. The next day a female was killed in that vicinity.

Montgomery County: 1 was shot three miles northwest of Linden, November 22, 1905; 1 was killed near Darlington on November 21, 1905.

Warren County: 1 killed on December 21, 1905.

Hancock County: 1 shot one mile northwest of Fortville.

Johnson County: 1 taken about six miles south of Franklin.

Shelby County: 1 killed about December 1, 1905, below Shelbyville, by Frank Hoffman; 1 killed by Isom Kelsey two and one-half miles west of Shelbyville December 30, 1905; 1 killed by John Tucker about December 16, 1905.

Marion County: 1 taken near Southport December 20, 1905.

Mr. Fletcher M. Noe, Indianapolis, Ind., informs me that Snowy Owls had been very generally taken at many central points in the State. He had received seven during December, 1905, and had heard of twice that number having been taken close by. Some of these records may refer to those given in detail by Mr. Butler.

The mean temperature for Indiana for November, 1905, was 41.07°; for December, 1905, 32.08°.

ILLINOIS.

Mr. Fred. Kæmpfer, taxidermist, Chicago, Ill., received twenty-two Snowy Owls which were sent in from various localities in the northern part of the State. (This record was given in part in 'The Auk,' Jan., 1906.) I examined all these specimens and the majority were dark colored females.

Mr. Rud Haman, taxidermist, Chicago, Ill., has received seven Snowy Owls from Fox Lake, Grass Lake, Barrington, and Evanston, Ill. Three were killed between Nov. 24 and Dec. 8, 1905.

Mr. Harry S. Swarth, Field Museum Natural History, Chicago, Ill., saw a Snowy Owl Feb. 2, 1906, in Jackson Park, within the City limits. The bird flew over him within gun shot. On Jan. 17, 1906, another was seen in the same locality and was not fifty feet away from the observer.

Prof. S. A. Forbes, State Laboratory of Natural History, Urbana, Ill., writing under date of Jan. 25, 1906, gives records of five specimens of Snowy Owls as follows: "Four have been brought to us this winter from this neighborhood, the furthest one from Danville, Ill., and the last from Urbana. A fifth one has been reported from Tuscola, Ill., a short distance south."

Mr. Amos W. Butler of Indianapolis, Ind., reports that one of two seen, was killed two miles north of Kansas, Ill., on Dec. 2, 1905, by Earley Dulep.

Mr. Otto Widmann, St. Louis, Mo., writes under date of Jan. 7, 1906: "Mr. Frank Schwarz, the taxidermist, informs me that he received two Snowy Owls this fall, a male and female, from Albion, Ill. (not far from Mt. Carmel), Nov. 21, 1905."

On Nov. 17, 1905, I saw a specimen at Highland Park, Ill., and watched it for an hour. (Recorded in 'The Auk' for Jan., 1906.)

The mean temperature for Illinois for November, 1905, was 42.02°; for December, 1905, 31.04°.

A BIBLIOGRAPHY AND NOMENCLATOR OF THE ORNITHOLOGICAL WORKS OF JOHN JAMES AUDUBON.

BY WITMER STONE.

NOTWITHSTANDING their preëminence in American ornithological literature and their historic interest, there has not appeared, so far as I am aware, any comprehensive review of the editions, dates of publication, and new species of the works of John James Audubon. While it is probably generally known that the elephant folio plates bear the scientific names of the birds represented upon them, and that they were published from one to four years prior to the descriptions in the 'Ornithological Biography,' it will be found that the new species are all dated from the latter in the A. O. U. Check-

List, and in all other works that I have consulted. This fact, together with the discovery of a few names on the plates which seem to have been universally overlooked, will be my excuse for the following summary, which, while it may contain nothing new, puts the matter in convenient shape for ready reference.

Audubon's ornithological works, exclusive of a few magazine articles, are four in number: (1) The Elephant Folio Plates of 'The Birds of America'; (2) The 'Ornithological Biography,' virtually the text to the above; (3) The 'Synopsis of the Birds of North America,' a systematic summary of the preceding; and (4) the octavo edition of 'Birds of America,' text and plates combined. We shall consider them in order.

I.— THE ELEPHANT FOLIO.

The publication of this great work was begun in Edinburgh in 1827, the plates being engraved by W. H. Lizars. It appeared in parts, which Dr. Coues says are "supposed to be of 5 pll. each." Of this I think there can be no doubt as each five successive plates bear a different "part" number. The first plate in each number is a large full page one representing one of the larger species. Audubon refers to this plan in his journal when he says: "The wild Turkey-cock is to be the large bird of my first number" (Audubon and his Journals, I, p. 175).

Each plate contains the common and scientific name of the bird and also of the plant figured with it. The lettering of the bird names being entirely in capitals, it is often difficult to tell whether it was the intention to capitalize the initial letter of the specific name or not; in some instances, however, it is made distinctly larger. Authorities are sometimes placed after the names and sometimes omitted, while those that are given are frequently incorrect.

Lizars proved very slow and his work, especially that of the colorists, was by no means satisfactory. Later on Audubon engaged Robert Havell of London to do the coloring, and some time between this date and September 30, transferred the whole work to his hands. It seems that Lizars engraved only two parts,

i. e., ten plates, for under date of October 27, 1827, Audubon states in his journal, "W. H. Lizars saw the plates of No. 3 and admired them much, called his workmen and observed to them that the London artists beat them completely." Parts 1 and 2, pll. I–X, then are the work of Lizars, and Parts 3–87, pll. XI–CCCCXXXV, the work of Havell. This is not the whole story, however, for it seems that in 1829, Havell retouched some of Lizars's plates and entirely re-engraved some of the others. Thus in the copy of the folio in the library of the Academy of Natural Sciences of Philadelphia plates VIII and IX are marked "Engraved by W. H. Lizars Edin^{r}."; plates I, II, VI, VII, "Engraved by W. H. Lizars Edin^{r}. Retouched by R. Havell Jun^{r}." (some have London added after Havell's name, and plates II and VII bear date 1829); plates III, IV, V, X, "Engraved, Printed, & Coloured by R. Havell Jun^{r}."

Being curious to know whether other American copies agreed with this one or whether some of them contained all of the original Lizars plates, and whether the name "*Dacnis protonotarius*" quoted for the Prothonotary Warbler might not occur in them, I corresponded with several gentlemen who owned or had access to copies, and obtained data upon six sets. Five of these were exactly like the Academy set while the one in the Museum of Comparative Zoölogy contained the original Lizars plates for which I had been searching. Correspondence with Dr. Walter Faxon brought out the fact that he had long been aware of these two editions, and through his kindness I am able to present transcripts of the inscriptions on the Lizars plates.

Plate I. "Great American Cock, Male, Vulgo (Wild Turkey) Meleagris Gallopavo." In the Havell retouched plate the first name is suppressed.

Plate II. "Black-billed Cuckoo, Coccyzus erythrophthalmus." Corrected in the retouched plate to "Yellow-billed Cuckoo, Coccyzus americanus."

Plate III. "Prothonotary Warbler, Dacnis protonotarius," changed in the Havell plate to "Sylvia protonotarius."

Plate VI. "Great American Hen & Young, Vulgo Female Wild Turkey, Meleagris gallopavo," changed to "Wild Turkey, etc."

Plate VII. "or Common Crow Blackbird" is added after Purple Grackle in the Havell plate.

Plate X. "Brown Lark. Anthus aquaticus" changed in the Havell plate to "Brown Titlark, Anthus spinoletta Bonap."

In the other plates there is no change in the bird names, though the plant names and the letters after Audubon's name differ in the two editions.

From a comparison of the engravers' names on the two sets it would appear that while the inscriptions on plates VIII and IX are somewhat altered, the plates themselves were neither re-engraved nor retouched, while the deductions drawn from the Academy's copy relative to the other plates is correct. Furthermore, it appears that R. Havell, Sr., did the coloring of the original Lizars plate VI and the printing and coloring of plates VII–X of the Lizars edition.

Audubon at the end of Volume I of the 'Ornithological Biography' gives the dates of publication for the first twenty parts and these are confirmed at several places in his journal.

No one seems to quote dates for the remaining plates, but I find that, beginning with Part 22, the plates are nearly all dated and most of the missing dates are easily supplied by comparing the dated parts which precede and follow. Part 58 (plates 286–290) was published probably early in 1836, but three of the plates bear the date 1835, while 286 and 288 are dated 1836.

The dates of publication of the plates appear, therefore, to be as follows:

1827,	Plates 1–25.	1833,	Plates 156–185.
1828,	" 26–50.	1834,	" 186–235.
1829,	" 51–75.	1835,	" 236–285.[1]
1830,	" 76–100.	1836,	" 286–350.[1]
1831,	" 101–125?	1837,	" 351–400.
1832,	" 126–155?	1838,	" 400–435.

Of the two years which are in doubt, plates 106–115 are dated 1831 and plates 131–155, 1832, while the rest are undated.

[1] By comparing the title pages of volume III and IIII a discrepancy will be found; since the date there given for plates 201–300 is 1834–1835 and for plates 301–435 is 1835–1838. This would imply that notwithstanding the fact that plates 286 to 300 are dated 1836 they and some of those immediately following really appeared in 1835. This is, moreover, proved by records in the library of the Philadelphia Academy stating that plates 291–300 were received October 2, 1835! This throws a doubt upon the actual year of publication of plates 301 to, say, 400. The earliest of this series probably appeared in 1835, the last possibly early in 1838, but the exact number published in 1836 and 1837 I cannot ascertain.

Dr. Chas. W. Richmond sends me the following additional data gathered from various sources, mainly by Dr. Coues.

Part	1	appeared	July, 1827.	Plate	181	appeared by	Feb. 1, 1834.
"	4	"	Nov., 1827.	"	200	"	" June 14, 1834.
"	5	"	Dec., 1827.	"	301	"	" April, 1836.
"	12	"	by March, 1829.	"	390	"	" Nov. 1, 1837.
"	17	"	July, 1830.				

He also sends a copy of an advertisement in 'The Atheneum' for January 6, 1838, containing the following: "The number of perfect copies at present [Nov. 1, 1837] subscribed for does not exceed 190, of which upward of 80 are subscribed for in America, and the expense of getting them up is so great that not more than ten or fifteen copies above the number subscribed for will be prepared."

The plates were bound in four volumes, which are dated as follows on the title-pages: I (plates 1–100), 1827–1830; II (plates 101–200), 1831–1834; III (plates 201–300), 1834–1835; IIII (plates 301–435), 1835–1838 June 20. It will be noted, however, that these dates do not always correspond with the dates on the plates.

There is another edition of the Folio plates, "reissued by J. W. Audubon" and dated on the title page 1860,[1] published by Roe, Lockwood & Son, New York. This is very inferior to the original, the plates being reproduced by chromolithography by J. Bien, 180 Broadway, N. Y. There are apparently only 140 plates in this edition; those that are numbered correspond to the plate numbers in the octavo, but there are additional numbers which may indicate that this edition was published in parts; for instance, the Crossbill, "plate 200," is also marked No. 11–4. Some of these plates are dated 1859 and some 1860. The nomenclature seems to be the same as in the Havell folio.

On the 435 plates of the original edition there are represented 489 supposed distinct species of birds.[2] Twenty species are each represented on two plates, and there are thirty-five composite plates where from two to six species are represented together.

[1] Coues erroneously quotes 1861, but at second hand.

[2] The name of the Golden-eyed Duck appears differently on the two plates where it is figured, but it was not intended to recognize two species.

These are almost all at the end of Volume IIII, and the crowding was necessitated by the unwillingness of the subscribers to have the work extend beyond the stipulated 80 numbers (400 plates). Even as it was, thirty-five additional plates were required, and a number of subscribers refused to take them.[1]

Forty-seven new specific names occur on the plates, and should date from them and not from the 'Ornithological Biography.' Some of these seem to have been entirely overlooked, as "*Fringilla maculata*" for the Blackheaded Grosbeak, and "*Strix californica*" for the California Burrowing Owl. Others seldom cited are "*Falco labradora*," based on a Labrador Gyrfalcon, and "*Cinclus townsendi*" on a young Water Ouzel. A remarkable generic name on the plate of the Surf-bird is "*Frinca townsendi.*" Those who believe in adopting every spelling as a different generic term are welcome to replace *Aphriza* with this *lapsus calami*, but for my part it goes as a misspelling of *Tringa*! None of these names are mentioned in any of Audubon's subsequent works. A complete list of the new species is given below.

II. THE ORNITHOLOGICAL BIOGRAPHY.

This work, in five volumes, is the text to the folio plates and the species are treated in exactly the same order. It was published in Edinburgh.

Vol. I, dated 1831 (March in the preface), covers plates 1 to 100.

Vol. II, dated 1834, covers plates 101–200. The preface is dated December 1 but it is quite likely that it did not appear until after January 1, 1835.

Vol. III, dated 1835 (December 1, in preface), covers plates 201–300, and certainly did not appear until the following year, as many of the plates here treated are dated 1836.

Vol. IV, dated 1838 (November 1, in preface), covers plates 301–387 (was reviewed in February, 1839).

Vol. V, dated 1839 (May 1, in preface—had appeared by July 27), covers the remaining plates, with the addition of a great amount of supplementary matter concerning various species, and the description of a number of new ones.

[1] See Introduction to Vol. IV, Orn. Biography, pp. xxi–xxii.

While Audubon was engaged in preparing the manuscript of the first volume of the 'Biography' his wife "copied it all to send to America, to secure the copyright there." [1] It was published under the direction of Dr. Harlan in Philadelphia, and bears the same date as the Edinburgh edition. A copy presented to the Philadelphia Academy by Audubon is dated on the fly-leaf October, 1831. So far as nomenclature is concerned the two editions are identical. There are said to be copies from the Edinburgh types with a Philadelphia imprint dated 1832 [2] but these I have not seen. Of the remaining volumes there seems to be but the one edition.

Comparing the number of species recognized in the Folio with those in the 'Biography,' we find that the Rough-winged Swallow and Mourning Warbler are added in the body of the latter work and sixteen others, mostly western species, in the supplementary portion. Ten other species, seen but not characterized, are given in a separate list at the end of Volume V, and in Volume IV a loon, probably the large yellow-billed species known as *Gavia adamsi*, is provisionally named *Colymbus Richardsoni*.

As against these additions, five of the species of the Folio are suppressed in the body of the text, and eleven recognized in the early volumes of the latter are reduced to synonymy in the supplement to Volume V.[3] We thus have 502 species recognized at this period of which eleven, as stated above, were more or less hypothe-

[1] Extract from journal in 'Life of Audubon,' edited by his widow, p. 206.

[2] *Cf.* Loomis, Auk, 1891, p. 230, where, however, the date of the real Philadelphia edition is misquoted 1832.

[3] These are as follows:

Falco hyemalis, pl. 71	= lineatus, O. B. V, p. 380.
" labradora, 196	= islandicus, O. B. II, 552.
" temerarius, 92	= columbarius, O. B. V, 368.
Strix californica, 432	= cunicularia, O. B. V, 264.
Muscicapa selbii, 9	= mitrata, O. B. V, 465.
Sylvia vigorsii, 30	= pinus, O. B. V, 457.
" rara, 49	= cœrulea, O. B. V, 456.
" childrenii, 35	= æstiva, O. B. V, 453.
" palmarum, 163	= petechia, O. B. II, 259.
" sphagnosa, 148	= canadensis, O. B. V, 458.
" autumnalis, 88	= parus, O. B. V, 457.
" roscoe, 24	= trichas, O. B. V, 308.
Cinclus mortoni, 435	= americanus, O. B. V, 303.
" townsendi, 435	= americanus, O. B. V, 303.
Turdus ludovicianus, 19	= aquaticus, O. B. V, 284.
Anthus pipiens, 80	= spilonetta, O. B. V, 449.

tical. The twenty-six new names that date from the 'Biography' are listed below.

III.— THE SYNOPSIS.

This single volume comprises the description, synonymy, and habitat of each species, all arranged in systematic order, with the nomenclature revised and brought up to date. The number of species recognized is the same as in the 'Biography,' with the exception of the eleven "hypothetical species" which are here omitted. Two species are added, *i. e.*, Stanley's Goldfinch and American Ptarmigan, but two others, the European Golden Plover and Common Ptarmigan, are suppressed, so that the total remains the same, 491. Five new specific names date from the 'Synopsis,' and a number of new genera.

The 'Synopsis' is probably in a large measure the work of Macgillivray who was engaged by Audubon to prepare the scientific descriptions, etc., for the 'Biography.'

IV.— THE OCTAVO EDITION OF 'BIRDS OF AMERICA.'

This work, in seven volumes, follows exactly the order and nomenclature of the 'Synopsis,' the text being that of the 'Biography' with little change except in the order of the species and the omission of the episodes. It was published in one hundred parts, each five plates, Philadelphia, 1840–1844.

There are no new names, and no additional species until the end of Volume VII, where seventeen birds not before treated are figured and described. These were mostly procured on the Missouri River Journey.

The plates of the Octavo edition were reduced from the Elephant Folio with the aid of the camera lucida by John W. Audubon. The composite plates are broken up so that only one species appears on each plate of the Octavo, and where the same species was figured on two of the original plates the figures have been combined and part of them left out, or one of the plates has been omitted.

Besides the seventeen additional plates in the last part, seven

of the species described in the 'Biography' and 'Synopsis' are here figured for the first time, *i. e.*, Rough-winged Swallow, Mourning Warbler, Delafield's Warbler, Parkman's Wren, Stanley's Goldfinch, Morton's Finch, and American Ptarmigan.

The total number of plates in the Octavo is 500; four of the largest birds, however, are illustrated by two plates each, reducing the figured species to 496, to which are to be added 12 unfigured species, the descriptions of which are reprinted from the 'Biography,' making the final total of species recognized by Audubon 508.

Of these 474 are recognized to-day in the A. O. U. Check-List, 17 have proved to be identical with others, 10 are extralimital, 2 are hybrids, and 5 have never been found since. Of the species suppressed by Audubon 2 have been resurrected.

Of the 508, and the two since reëstablished, Audubon was personally acquainted with 385, while 74 were sent him by John K. Townsend from the Pacific coast and 51 he obtained from museums and other sources.

There are several reprints of the Octavo 'Birds of America' quoted in Coues's 'Bibliography' which are interesting only from a bibliographic standpoint, for, so far as I can ascertain, there is no additional matter and no new names contained in them.

COMPLETE LIST OF NEW SPECIES PROPOSED BY AUDUBON.

Folio Plates, Birds of America.

Muscicapa Bonapartii, Pl. 5, 1827. St. Francisville, La., Aug. 13, 1821.
Muscicapa Selbii, Pl. 9, 1827. St. Francisville, La., July 1, 1821.
Falco Washingtonii, Pl. 11, 1827. Near Henderson, Ky.
Troglodytes bewickii, Pl. 18, 1827. St. Francisville, La., Oct. 19, 1821.
Turdus ludovicianus, Pl. 19, 1827. Louisiana.
Sylvia Roscoe, Pl. 24, 1827. Cypress Swamp, near the river, in Mississippi, Sep., 1821.
Sylvia Vigorsii, Pl. 30, 1828. Perkiomen Creek, Pa., May.
Sylvia Childrenii, Pl. 35, 1828. Jackson, La., May, 1821.
Falco Stanleii, Pl. 36, 1828.
Muscicapa Traillii, Pl. 45, 1828. Prairie lands, Arkansas River.
Regulus cuvierii, Pl. 55, 1829. Fatland Ford, Schuylkill River, Pa., June 8, 1812.
Sylvia carbonata, Pl. 60, 1829. Henderson, Ky., May, 1811.

Sylvia rathbonia, Pl. 65, 1829. Louisiana or Mississippi.

Emberiza henslowii, Pl. 70, 1829. Opposite Cincinnati in Kentucky. 1820.

Falco temerarius, Pl. 75, 1829. Fatland Ford, Pa., April, 1812.

Anthus pipiens, Pl. 80, 1830. Prairies of our N. W. States [Illinois?].

Falco Harlani, Pl. 86, 1830. St. Francisville, La.

Corvus americanus, Pl. 156, 1833.

Fringilla Bachmani, Pl. 165, 1833. Charleston, S. C.

Troglodytes americana, Pl. 179, 1833. Dennisville, Me., 1832.

Sylvia Bachmanii, Pl. 185, 1833. Charleston, S. C.

Fringilla Lincolnii, Pl. 193, 1834. [Labrador.]

Falco Labradora, Pl. 196, 1834. Labrador.

Sylvia swainsonii, Pl. 198, 1834. Charleston, S. C.

Rallus elegans, Pl. 203, 1834.

Carbo Floridanus, Pl. 252, 1835. Florida Keyes.

Ardea occidentalis, Pl. 281, 1835. Florida Keyes.

Pelicanus americanus, Pl. 311, 1836. Probably Kentucky.

Corvus nuttallii, Pl. 361, f. 1, 1836 (7). Santa Barbara, Cal.[1]

Fringilla maculata, Pl. 373, ff. 2, 3, 4, 1837. Columbia River.

Buteo harrisi, Pl. 392, 1837. Between Bayou Sara and Natchez.

Diomedea fusca, Pl. 407, 1838. Mouth of the Columbia River.

Sterna havelli, Pl. 409, f. 1, 1838. Opposite New Orleans, 1820.

Sterna trudeaui, Pl. 409, f. 2, 1838. Great Egg Harbor, N. J.

Phalacrocorax resplendens, Pl. 412 [f. 1], 1838. Cape Disappointment, Columbia River.

Phalacrocorax townsendi, Pl. 412 [f. 2], 1838. Cape Disappointment, Columbia River, Oct., 1836.

Picus martini, Pl. 417, ff. 1, 2, 1838. Toronto, Canada.

Picus phillipsi, Pl. 417, ff. 5, 6, 1838. Massachusetts.

Picus harrisi, Pl. 417, ff. 8, 9, 1838. Columbia River.

Ptilogony's [*sic*] Townsendi, Pl. 419, f. 2, 1838. Columbia River.

Plectrophanes townsendi, Pl. 424, f. 7, 1838. Columbia River.

Hœmatopus bachmanii, Pl. 427, f. 1, 1838. Mouth of the Columbia.

Hœmatopus townsendi, Pl. 427, f. 2, 1838. Mouth of the Columbia.

Frinca townsendi, Pl. 428, 1838. Cape Disappointment, Columbia River.

Uria townsendi, Pl. 430, 1838. Mouth of the Columbia.

Strix californica, Pl. 432, f. 2, 1838. [California.]

Ornithological Biography.

Regulus Carbunculus "Bon.," I, p. 288, 1831. Fatland Ford, Pa.

Emberiza Townsendii, II, p. 183, 1834. "Vicinity of Philadelphia," really New Garden, Chester Co., Pa.

[1] This and possibly the next are the only new names the dates of which seem to be in doubt.

Cinclus townsendi, Pl. 435, f. 1, 1838. Columbia River.
Cinclus mortoni, Pl. 435, f. 2, 1838. [Columbia River.]
Fringilla Macgillivraii, II, p. 285, 1834. Charleston, S. C.
Parus carolinensis, II, p. 341, 1834.
Colymbus Richardsonii, IV, p. 53, 1838.
Anas Breweri, IV, p. 302, 1838.
Hirundo serripennis, IV, p. 593, 1838. Charleston, S. C.
Sylvia Macgillivrayi, V, p. 75, 1839. Columbia River.
Turdus Nanus, V, p. 201, 1839. Columbia River.
Sylvia Delafieldi, V, p. 307, 1839. California.
Troglodytes Parkmanii, V, p. 310, 1839. Columbia River.
Fringilla Mortoni, V, p. 312, 1839. "Upper California" [really Chili].
Picus Gairdnerii, V, p. 317, 1839. Probably Columbia River.
Larus occidentalis, V, p. 320, 1839. Cape Disappointment, Columbia River, Oct. 7, 1836.
Diomedea nigripes, V, p. 327, 1839. Lat. 30° 44', long. 146°, Pacific Ocean, Dec. 25, 1834.
Procellaria pacifica, V, p. 331 [printed 321], 1839. Pacific Ocean.
Procellaria tenuirostris, V, p. 333, 1839. Within a day's sail from the mouth of the Columbia.
Falco Bachmanii, V, p. 334, 1839. South Carolina.
Strix forficata, V, p. 334, 1839. "Green Bay, on my way across to the Mississippi."
Tantalus fuscus, V, p. 334, 1839. "On the bayou between Silver Springs and St. Johns River, Fla."
Phasianus Americanus, V, p. 335, 1839. "Thornbury's Pass, near Mallade River, Rocky Mts.
Caprimulgus Nuttallii, V, p. 335, 1839.[1] Rocky Mountains.
Picus pyrrhonotus, V, p. 335, 1839. Near Ft. Van Couver.
Fringilla chlorura, V, p. 336, 1839. "July 14, 1834, Townsend."
Turdus Townsendi, V, p. 336, 1839. "Shoshone River, west of the Rocky Mts."
Phalacrocorax leucurus, V, p. 336, 1839. Off mouth of Columbia River.
Phalacrocorax leuconotus, V, p. 336, 1839. Off mouth of Columbia River.

Synopsis.

Strix americana, p. 25, 1839. Southern States, Texas to N. C.
Carduelis Yarrellii, p. 117, 1839. Upper California.
Carduelis stanleyi, p. 118, 1839. Upper California.
Lagopus americanus, p. 207, 1839. Melville Island, Churchill River.
Microptera americana, p. 250, 1839. Throughout the Country.

[1] This is properly characterized in Vol. VII, Octavo Birds of America, 1844, p. 350 It is here a nomen nudum.

Octavo Edition of Birds of America.

Fringilla Harrisii, VII, p. 331, 1844. Near Black Snake Hills, May 4, 1843.

Vireo Bellii, VII, p. 333, 1844. Near Black Snake Hills, May 4, 1843.

Alauda Spragueii, VII, p. 334, 1844. Near Ft. Union, June 19, 1843.

Plectrophanes Smithii, VII, p. 336, 1844. Edwardsville, Ill.

Emberiza LeConteii, VII, p. 338, 1844. May 24, 1843.

Sturnella neglecta, VII, p. 339, 1844. Above Ft. Croghan.

Quiscalus Breweri, VII, p. 345, 1844. Near Ft. Union.

Emberiza Shattuckii, VII, p. 347, 1844. Upper Missouri.

Picus Ayresii, VII, p. 348, 1844. Near Ft. Union.

[Caprimulgus Nuttallii, VII, p. 350, 1844.] Below Ft. Union, Sep. 7, 1843.

Columba Trudeauii, VII, p. 352, 1844. Texas.

Emberiza Bairdii, VII, p. 359, 1844. Near Ft. Union, July 26, 1843.

CONCORDANCE OF NOMENCLATURE IN FOLIO PLATES AND ORNITHOLOGICAL BIOGRAPHY.

Plates.	*Orn. Biog.*
3. Sylvia protonotaria	Sylvia protonotarius.
36. Falco Stanleii	Falco Stanleyii.
103. Sylvia pardalina	Muscicapa canadensis.
106. Cathartes atratus	Cathartes Jota.
118. Muscicapa gilva	Vireo gilvus.
122. Fringilla corulea	Fringilla cœrulea.
124. Muscicapa pusilla	Muscicapa Wilsonii.
135. Sylvia Blackburnia	Sylvia Blackburniæ.
151. Cathartes atratus	Cathartes aura.
160. Parus atricapillus	Parus carolinensis.
163. Sylvia palmarum	Sylvia petechia.
170. Tyrannus griseus	Muscicapa dominicensis.
173. Hirundo americana	Hirundo rustica.
174. Muscicapa inornata	Muscicapa Cooperi.
183. Regulus cristatus	Regulus tricolor.
192. Lanius Septentrionalis	Lanius excubitor.
196. Falco Labradora	Falco islandicus.
212. Larus canus	Larus zonorhynchus.
223. Hæmatopus ostralegus	Hæmatopus palliatus.
227. Anas acuta	Anus acuta.
228. Anas carolinensis	Anas Crecca.
248. Podiceps carolinensis	Prodiceps carolinensis.
252. Carbo Floridanus	Phalacrocorax floridanus.
253. Lestris Pomarina	Lestris pomarinus.

255. Phalaropus Platyrhynchus	Phalaropus fulicarius.
266. Lestris parasitica	Lestris parasiticus.
279. Sterna Boyssii	Sterna cantiaca.
311. Pelicanus americanus	Pelecanus americanus.
323. Rhincops nigra	Rhynchops nigra.
335. Scolopax grisea	Scolopax noveboracensis.
338. Anas glocitans	Anas Breweri.
360. Sylvia troglodytes	Troglodytes hyemalis.
360. Troglodytes obselata	Troglodytes obsoletus
362. Corvus columbianus	Nucifraga columbiana.
365. Fringilla laponica	Fringilla lapponica.
372. Buteo vulgaris	Falco Buteo.
373. Fringilla maculata	Fringilla melanocephala.
384. Fringilla americana	Emberiza americana.
385. Hirundo thalassinus	Hirundo thalassina.
386. Ardea alba	Ardea egretta.
392. Buteo harrisi	Falco harrisii.
393. Sialia arctica	Sylvia arctica.
393. Sialia occidentalis	Sylvia occidentalis.
394. Plectrophanes ornata	Emberiza ornata.
394. Pipilo arctica	Fringilla arctica.
399. Sylvia philadelphia	Sylvia macgillivrayi.
400. Fringilla spaltria	Fringilla psaltria.
400. Linota borealis	Fringilla borealis.
402. Mergulus antiquus	Uria antiqua.
402. Phaleris superciliata	Phaleris cristatella.
402. Ceratorrhina occidentalis	Ceratorhyncha occidentalis.
403. Clangula vulgaris	Fuligula clangula.
417. Picus martini	Picus martinæ.
417. Picus hirsitus	Picus hirsutus.
417. Picus phillipsi	Picus phillipsii.
417. Picus harrisi	Picus harrisii.
418. Turdus minor	Turdus nanus.
419. Ptilogony's Townsendi	Ptilogonys Townsendi.
421. Pelicanus fuscus	Pelecanus fuscus.
422. Buteo lagopus	Falco lagopus.
424. Pyrrhula frontalis	Fringilla frontalis.
424. Linaria tephrocotis	Fringilla tephrocotis.
424. Plectrophanes townsendi	Fringilla townsendi.
427. Hœmatopus bachmani	Hæmatopus bachmani.
427. Hœmatopus townsendi	Hæmatopus townsendi.
428. Frinca townsendi	Aphriza townsendi.
429. Fuligula stelleri	Fuligula dispar.
432. Strix californica	Strix cunicularia.
432. Strix noctua	Strix passerina.
433. Icterus bullocki	Icterus bullockii.
433. Carduelis mexicanus	Fringilla mexicana.

434. Tyrannula pusilla	Muscicapa pusilla.
434. Vireo bartrami	Vireo bartramii.
434. Muscicapa phœbe	Muscicapa Richardsonii.
434. Tyrannula nigricans	Muscicapa nigricans.
435. Cinclus townsendi	Cinclus americanus.
435. Cinclus mortoni	Cinclus americanus.

All other species bear the same name in both works.

ERRORS OF REFERENCE.

In Volume V, plate reference to *Fuligula stelleri* should be CCCCXXIX instead of CCCCXXX, and to *Uria townsendi* CCCCXXX. This error has been copied in every subsequent work I have consulted.

In the same volume plate reference to *Perdix neoxenus* should be CCCCXXIII, fig. 1, not fig. 3; and to *Perdix plumifera* same plate, figs. 2 and 3, not 1 and 2.

The following occur in the supplementary part of Volume V:

Falco harlani, LXXXIV for LXXXVI
Phalacrocorax dilophus, CCLVIII for CCLVII
Charadrius vociferus, CCXV for CCXXV

In the 'Synopsis' there are the following errors in the plate references:

Hirundo purpurea	XXIII	should be	XXII
Emberiza graminea	XC	"	XCIV
Muscicapa dominicensis	CLXXII	"	CLXX
Sylvicola pinus	CXI	"	CXL
" petechia	CLXIV	"	CXLV
Turdus wilsoni	CLXVI	"	CLXIV
Icterus baltimore	CCCCXXIII	"	CCCCXXXIII
Quiscalus ferrugineus	CXLVII	"	CLVII
Picus pileatus	XIII	"	CXI
" carolinus	CCCCXV	"	CCCCXVI
Mergus cucullatus	CCXXXIII	"	CCXXXII
Thalassodroma pelagica	CCXI	"	CCCXL
Colymbus arcticus	CCII	"	CCCXLVI
Phalacrocorax floridanus	CCLI	"	CCLII

In the Octavo edition the names on plates 187 and 188, representing the Brown Finch and Townsend's Finch, are transposed though the plate references in the text are correct.

ERRORS OF QUOTATION.

This seems to be the proper place to call attention to the following corrections, which are written in pencil on the margins of the copy of Volume V of the 'Ornithological Biography' in the Library of the Academy of Natural Sciences of Philadelphia, in the hand of John K. Townsend and signed J. K. T. They refer to notes furnished by him to Audubon and misplaced by the latter.

Volume V, p. 22, paragraph on habits of *Fringilla cinerea* "belongs to *Fringilla grammaca*, V, p. 17."

Page 204, Audubon says that Townsend procured a thrush which "he considered as new," etc. Townsend says, "mistake, the specimen was marked *Turdus wilsoni*."

Page 236, under *Fringilla townsendi*, the quotation from Townsend relative to its habits "belongs to *Emberiza pallida*, p. 66."

Page 464, the quotations under *Sylvia mitrata*, Townsend says, are "a mistake. The bird alluded to both by Mr. Nuttall and myself is Sylvia Wilsoni." The real mistake is in the heading the English portion of which is correct, *i. e.*, Green Black-capped Warbler; under this Audubon gives *Sylvia mitrata* instead of *S. wilsoni*. A similar confusion is found on p. 623 where 'Eared Grebe 'and 'Podiceps cornutus' are associated.

Page 512, under *Fringilla iliaca* the statement that it occurs on the Columbia river is a mistake, according to Townsend.

Those interested in the charges of plagiarism raised by Audubon against Wilson,[1] after the latter's death, should read Ord's refutation and counter charge (Proc. Amer. Philosoph. Society, Vol. I, p. 272) where it is stated that Audubon copied Wilson's figure of the Mississippi Kite to complete his plate 117. It must be admitted that a tracing of Wilson's bird fits exactly over Audubon's figure, but the copyist left out one of the bird's toes! The charge against Wilson resolves itself solely into a question of veracity between Audubon and Ord; there is no resemblance whatever between the two figures of the Small-headed Flycatcher, while Audubon's statements about Wilson's acceptance of his offer to let him copy some of his drawings are contradictory (*cf.* Ornith. Biog., I, p. 439 and V, p. 291).

[1] Ornith Biog., V. p. 291.

NOTES ON SOME NORTHERN BIRDS.

BY REV. C. W. G. EIFRIG.

KNOWING that bird notes from the eastern coast of Hudson Bay are very scarce, I asked Mr. A. P. Low, who has made many trips to that and adjacent Territories in the employ of private corporations or the Dominion Geological Survey, for his bird notes entered in his diaries and journals during the several trips. Unfortunately these had either been mislaid, lost, or given over to the companies to whom the collections had been turned over, with the exception of the few which, through the kindness of Mr. Low, I am here able to present. I add some of my own notes, which may prove of some interest. Mr. Low's notes are in the form as given to me, with the addition of a few explanatory words.

Notes on Birds taken at Great Whale River, East Coast of Hudson Bay, Lat. 55° 30′, Winter 1898–99.

"Nov. 4, 1898. Harold killed two Sharp-tailed Grouse and saw three others. Mr. Gillies says that the birds are rare, but have been taken as far north as Little Whale River."—This is, of course, *Pediœcetes phasianellus*. Macoun, 'Catalogue of Canadian Birds': "Mr. A. P. Low puts its northern limit in Labrador at Lat. 57°."—This would seem to extend the range of this species further east than given by most authors.

"1899. The following birds winter about Great Whale River: Labrador Jay (*Perisoreus canadensis nigricapillus*), Raven (*Corvus corax principalis*), Redpoll (*Acanthis linaria?*), Chickadee (*Parus atricapillus*, probably *hudsonicus*), American Crossbill (*Loxia curvirostrata minor*), Shrike (*Lanius borealis*), Canada Grouse (*Dendragopus canadensis*), Sharp-tailed Grouse (*Pediœcetes phasianellus*), Willow Ptarmigan (*Lagopus lagopus*), Rock Ptarmigan (*Lagopus rupestris*)."—This seems quite a list for this latitude.

"April 17. First Snowflake (*Plectrophenax nivalis*).

"March 26. Kittiwake killed at the mouth of the river; no open water; must have come in from beyond the Belcher Islands. Brünnich's Murre and the Dovekie were found frozen along the ice during the winter.

"May 1. Rough-legged Hawk (*Archibuteo lagopus sancti-johannis*).

"May 2. Large flocks of Snowflakes, Lapland Longspurs (*Calcarius lapponicus*), Shore Larks (*Otocoris alpestris*), two eagles (*Aquila chrysaëtos*), two hawks, and two Robins (*Merula migratoria*).

"May 11. First nest of Redpoll eggs.

"May 13. Long-tailed Duck (*Harelda hyemalis*).

"May 19. Sea Coot (*Oidemia perspicillata*).

"May 20. Red-throated Loon (*Gavia lumme*).

"May 24. Loons and Snow Geese.

"June 2–3. Many White and Blue Snow Geese passing north (*Chen hyperborea* or *C. h. nivalis* and *C. cærulescens*).

"June 12. Eggs of Herring Gull (*Larus argentatus*) and Eider (*Somateria dresseri*).

"May 11–24. Thirty-three nests of Redpoll.

"May 20. Nest of Goshawk (*Accipiter atricapillus*) in top of large tamarack, containing three eggs. Nest nearly two feet in diameter, made of small branches of larch, lined with small green spruce boughs and ptarmigan feathers.

"May 24. Nest of Robin.

"May 29. Nest and eggs of White-crowned Sparrow (*Zonotrichia leucophrys*)."

Notes on Birds of Ottawa, Ontario, and Vicinity.

HOLBŒLL'S GREBE (*Colymbus holbœlli*).— Oct. 16 a local gunner took a male on the Ottawa River of this rather rare species. What interested me was its stomach contents, which consisted of a bunch of feathers. As it is not known to feed on anything having feathers, it is somewhat surprizing. I looked up the matter in books at my command, but found little in explanation. Warren in his 'Birds of Pennsylvania' states that he found feathers in the stomachs of two of these grebes. In the ancient 'Knight's Pictorial

Museum of Animated Nature,' I found it stated that this grebe plucks out some of its own feathers either purposely to "aid in digestion" or inadvertently while preening. I cleaned the feathers therefore, and on close inspection and comparison it is seen that they undoubtedly are some of its own feathers. But why these birds should swallow so many of their feathers while preening, whereas none are found in the gizzards of other birds that preen just as much, would, I think, be hard to say. Or do they really eat them purposely to 'aid digestion'?

GLAUCOUS GULL (*Larus glaucus*). On December 2, 1905, the watchman at the Dominion rifle range here, which is on the south bank of the Ottawa River, took a specimen of this gull in one of the several immature plumages. This is the first record for this vicinity.

HYBRID BLACK DUCK (*Anas obscura rubripes?*).— The status of the Black Duck here is quite interesting. According to local ornithologists of long standing and of ability, the facts do not agree with Brewster's position as stated in Vol. XIX of 'The Auk.' We may revert to this sometime in the future. What is to be recorded here is an apparently new and curious hybrid. On last Nov. 20, I saw in the Ottawa market a number of Black Ducks that were strikingly dissimilar to the common form. The head was larger, the neck thicker and shorter, the color blacker, especially also about the head and neck, and the bill and tarsus shorter and stouter. The dealer said they had been shot on the St. Lawrence River, near Montreal. Two ornithological friends of mine, who besides being highly competent ornithologists, are also sportsmen of long experience, say that this form is a hybrid between Black Ducks used on the St. Lawrence as decoys and some domestic ducks. Are similar hybrids noticed elsewhere? — The more common hybrid form, Black Duck + Mallard also occurs here.

CANADA GOOSE (*Branta canadensis*).— There is a flock of semi-domesticated Canada Geese kept here in the residential part of Ottawa by a Mr. Latour. I know there are such semi-domesticated flocks elsewhere, *e. g.*, on Chincoteague Island, Virginia, but I would like to record this flock because it throws some light on the age question. Mr. Latour has one pair since

nineteen years, and they were three years old when he got them from another person; one is nineteen years old, another seventeen. The one he valued most, had died a short time previously, at the ripe old age of 33 years. He feeds them finely cut up hay, much oatmeal, and some sand and lime.

SOLITARY SANDPIPER (*Helodromas solitarius*).— What seems to be the first clear breeding record of this species for Ottawa and its immediate vicinity was made by Mr. Edward White, who last July saw the tiny and downy young of this species two or three days from the egg, together with their agitated parents. This was about ten miles from Ottawa, on the Ontario side of the river.

GREAT GRAY OWL (*Scotiaptex nebulosa*). A specimen of this rather rare casual visitant was shot last Nov. 20, by Mr. W. Kelley, a farmer of South March, fourteen miles west of Ottawa.

SCREECH OWL (*Megascops asio*).— This species has now been definitely established as breeding here. Last July and August Mr. George White found at various times 4–5 Screech Owls in a rarely used outbuilding, to which they had found an entrance, but could not find the exit. Two were starved to death when found, the others were yet alive and were released.

ARCTIC THREE-TOED WOODPECKER (*Picoides arcticus*).— June 14, 1905, while walking through a partially cleared spruce swamp at Inlet, Quebec, fifty miles northeast of Ottawa, I was attracted by a queer sound emanating from a bush. The sound was as if produced by pulling out the end of a clock spring and suddenly releasing it, producing a wiry, humming sound. The author of it proved to be a male of this woodpecker. In the course of the half hour that I watched him he showed himself master of quite a repertoire of notes and would-be songs. When flying he would say: *chut chut* and then rattle like a Kingfisher. When hammering on a tree and preening himself, he would intersperse those actions by a chuckling: *duck duck duck*. At last a Robin chased him away.—The quaint call of the Olive-sided Flycatcher (*Nuttallornis borealis*): *put take care*, one adding: *putt low*, could be heard at the same time.

CANADA JAY (*Perisoreus canadensis*).—While this bird was abundant here during the winter 1904–5, it is entirely absent this winter. Last Sept. 28, I saw a pair at Inlet, Quebec, where they

seem to breed— the Ottawa River may be put down as the southern boundary of their breeding range in this section. One of that pair looked strange, even comical, because he was entirely without tail. Nor was it because it was moulting, for it was fully feathered otherwise as was also its mate. Neither did the absence of its caudal appendage dampen its spirit of bravado, for it sailed into a wasp nest with a great deal of vim, not minding the wasps in the least. Wasps seem to be a staple article of food with them, when to be had, as Mr. Kingston, a local ornithologist, tells me that he has found wasps in their stomachs repeatedly.

RUSTY BLACKBIRD (*Euphagus carolinus*).— The southern boundary of the breeding range of this species seems to approximately coincide with that of the preceding species, at least in this region. July 12 I saw at a small lake in the Laurentian Hills, near Inlet, Quebec, a family of this species. I took one of the young to make sure. They had not come there on their migration, for they always stayed together, there were no migrants about, and in every way acted as if at home.

CHIPPING SPARROW (*Spizella socialis*).— Last Oct. 12, a large sparrow wave passed through the country near Eganville, Renfrew Co., Ont. There were Tree Sparrows, Juncos, White-crowned and White-throated Sparrows, and the present species. Among these last were a great number having one or several pink excrescences on feet or wings, which seemed to be of a somewhat horny texture. One, on the wing of a specimen I took, was as large as a pea. I never before noticed such growths to be so common as on that day.

FIELD SPARROW (*Spizella pusilla*).— In the large flight of migrants noted under the preceding species, were also quite a number of Field Sparrows. This is certainly a very northerly record for them, the place where they were observed being about eighty miles northwest from Ottawa. A few days previously Mr. E. White had seen one or several near this city. Despite two seasons' diligent searching for them here in summer, I have never been able to find one. How then can they turn up in migration, apparently in the company of birds having come from further north, seems hard to explain.

TOWHEE (*Pipilo erythrophthalmus*).— This handsome bird,

an old acquaintance of mine from Maryland, seems to be extending its breeding range to this latitude. While I never saw it here, I was surprised to see a mounted specimen, a male, in the small collection of the keeper at the rifle range, just without the city limits. Upon inquiry he stated to me, that he had seen three or four of these birds near the range during the summer of 1904, of which he shot and mounted the one in question. In the summer of 1906 he saw about ten of them frequenting the same place. It is to be hoped that they return in greater numbers and stay.

UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.[1]

II.

BAIRD TO AUDUBON.

Carlisle, June 20th, 1840.

Dear Sir

I was not less surprised than delighted at receiving your kind answer to my letter, for I felt like one who has done an act for which he does not know whether he is to be praised or blamed. I am very glad to hear that you purpose publishing a work on the Quadrupeds of our country, which no one is more capable of doing than yourself. Dr. Godman's work though very good as far as it goes yet is inferior in respect to minute and accurate distinction of species, as well as in being complete. May I take the liberty of asking the plan of your work, the size, expense &c. If you could

[1] Since the publication of the first series of these letters (Auk, Vol. XXIII, No. 2, April, 1906) I have received a number of additional ones. For the privilege of making copies and publishing them I am under many obligations to Miss M. E. Audubon.

give me some general idea of the manner in which I am to assist you & of what particular Genera & Species you wish information or specimens, I will do every thing in my power; for although of course more difficult to find than birds, yet I hope that by increased exertion to make up the difference. What do you think of the Zoological report[1] presented to the N. York Assembly last winter by Dr. DeKay? He created a great confusion in my brain respecting classification, which had already become quite muddled by reading the work of Mr. Swainson on "Birds" in Lardner's Cab. Cyclop. Can you tell me what bird his "*Corvus Cacolotl*"[2] is? I have seen some numbers of your work now publishing, and admire them very much. I have no doubt that it will do more to spread a love for Natural history, than any work ever published. For my part I read the description of birds and the episodes in your "*Ornithological Biography*" with the same motive of pleasure as I used to read a favorite novel.

We have a bird in our collection which differs essentially from the other species of its genus. It is a thrush and I send you quasi description below. I will send you this bird as well as the others spoken of by Philadelphia. I may have an opportunity of sending it there in a week or ten days. You will find them in the hands of Mr. J. Dickinson Sergeant, Chestnut St. two doors above the Mint.
Thrush. Turdus.
Bill stout, tail broad and even. Secondary quills and tail feathers mucronate, the former very much so: Third quill longest, exceeding the Second by $\frac{1}{12}$. Whole upper parts dusky olive, head only a shade darker, a dark spot before the eye; a line from base of upper mandible over the eye, and eyelids yellowish. Throat, neck and breast tinged with pale yellowish brown; and marked with decided and rather large brown spots. Sides dark yellowish brown, rest of lower parts white, quills and tail brown the edges

[1] Assembly Document No. 50. Jan. 24, 1840. "Communication from the Governor, transmitting several reports relative to the Geological Survey of the State." Includes Letter from J. E. DeKay, of the Zoölogical Department, dated May 7, 1839, with "Catalogue of the Animals belonging to the State of New York, as far as they have been figured and described, January 1, 1839" (pp. 7–14) and "Report of J. E. DeKay, of the Zoological Department" (pp. 15–36).

[2] *Corvus cacolotl* Wagler (Isis, 1831, 527), is a synonym of *Corvus sinuatus* Wagler, (Isis, 1829,748), the Mexican Raven (*Corvus corax sinuatus*) of the A. O. U. Check-List.

tinged with dark yellowish brown. Length to end of tail 7 inches. Wing from flexure $3\frac{9}{12}$. Tail $2\frac{3}{4}$. Bill along ridge $\frac{5}{12}$. Edge of lower mandible $\frac{7}{12}$. Tarsus 1. Middle toe and claw $\frac{10}{12}$. Hind do $\frac{6}{12}$. The only bird with which it can be compared is the Hermit Thrush, but from which it differs very materially. The bill is considerably stouter. It has no brownish red at all about it & its wings and tail are much darker; and though the spots on the breast are not so numerous, yet there is more of the pale yellowish brown on this, than on the neck & breast of the Hermit Thrush.

Believe me sir

Your Obt. Servant

Spencer F. Baird.

John J. Audubon. F. R. S. &c.

[Superscription] John J. Audubon. F. R. S.
86 White St.
New York.

BAIRD TO AUDUBON.

Carlisle, January 30th, 1841

Dear Sir

I sit down to write, as I dare say you yourself have, before now, surrounded by "Birds, Beasts &c. I have been pulling them from every corner of the house for the purpose of showing them to some friends who called to see them. They now amount to such a number that I find myself unable to keep them together in one room. I was very agreeably surprised this afternoon, on comparing the skin of a *Fuligula Marila*[1] shot in the Potomac, with that of a supposed one obtained near Carlisle, to find that the latter was the *Fuligula Rufitorques*.[2] Not having compared the *Rufitorques* with the description in the "Biography" and not attending to the difference in the Specula and bills, I had labelled it "*Fuligula Marila*" Young Male. I omitted to state that the little flycatcher I sent you in the summer had been obtained by Dr. Leib of Phila. but

[1] *Aythya marila nearctica.*
[2] *Aythya collaris.*

sometime after I had obtained my specimen. I hope that you will let me know all about those specimens I sent, Flycatcher, Thrush, Warbler, & Shrew. Is the specific Character of *Sciurus Capistratus*,[1] Viz. ears and nose white, as given in Bachman's monograph, essential. I got a specimen a few weeks ago, Length to end of tail vertebrae 24 inches. Tail vertebrae, 11 inches. Weight 2 lbs. 5 oz. Female. Above grizzled yellowish Gray & Black, beneath feruginous, as also are the ears & feet & tail beneath. Tail annulate with black. Nose brown. Bones light reddish. I do not know what to refer it to except to *S. Capistratus*.

When I was in Philadelphia in the summer I saw some flycatchers which Townsend and others called Traill's Flycatcher, being the same as those we have as "*Muscicapa Pusilla*." My Idea is certainly that they are the latter, having compared them very carefully with the descriptions, when fresh. I will send you one to see, in order that you may decide. Are you acquainted with any work on Comparative Anatomy of Birds & Quadrupeds. I have been using the article on Birds in Rees's Cyclopedia,[2] but not being able to make head or tail out of the description of the muscles &c, I threw it aside & wrote one myself. I however want to know such of the names, of muscles, as I cannot find from Bell, or McCartney. In what way do you keep Quadrupeds mounted? or merely in the skins: & also what length of time does it occupy you to skin & sew up a duck, or warbler? You see I am very inquisitive. Don't you think that you will come our way soon. I hope that we may see you before long. I have a great deal of advice to ask, & articles to show, also doubts to settle. I will send you those birds you wished by the first opportunity and believe me to be most sincerely

Your Obedient Servant

Spencer F. Baird.

[Superscription] John J. Audubon Esq.
No. 86 White St.
New York.

[1] *Sciurus niger*.

[2] Published in 45 vols., 1802–20.

BAIRD TO AUDUBON.

Carlisle, Feb. 8th, 1842.

My dear Mr. Audubon.

After a trial of two weeks I begin to find that I am getting over the shock caused by the sudden transition from the bustle of Broadway to the lifelessnes of Carlisle, and hope that by the application of the proper means I may in time perfectly recover. Philadelphia seemed dull but Carlisle was death itself. My visit now however seems but as a dream, and I have settled down into my old regular monotonous life as if I never had been absent a day. When I arrived my friends had a great many questions to ask of course, but almost the first ones on every lip were about Mr. Audubon,—how he looked? What was his age, whether the idea they had formed of him from his writings was correct, many queries also were respecting Mrs. A. and her sons; and all said that they would ever be grateful to them for their kindness, to one away from home. When I arrived in Philadelphia some unexpected intelligence caused me to come almost immediately on, instead of spending a week as anticipated. I however saw almost all of my acquaintances, having by dint of hard exercise managed to traverse almost the whole of the City without however having procured anything in the "Quadrupedologius" line. I had not been long in Carlisle before shouldering my gun I marched out to the creek and succeeded in compassing the death of a poor Golden eye, who unaware of its dangerous proximity to a second "Long Tom" [1] came flying calmly up stream, when "bang" went the gun, "splash" went the duck and "plunge" went my favorite black Newfoundland. Between the three I had the duck in my hand in five or ten minutes but as whisslers are never very good and not at all eatable now, I gave it to a companion who seemed to think he would like to try the

[1] Audubon's favorite gun, which had very long barrels. He always called it "Long Tom" and carried it on many of his expeditions. It is still in possession of the family, but the barrels were cut off to more modern proportions by those who used it after his death. It was not unusual for sportsmen of earlier days to give nicknames to their guns. I have shot with an old duck hunter whose old fashioned arm was familiarly known all over the country as "Old Betsie." There was a flint lock pistol, called "Long Tom," such as were used by the highwaymen in England in the early part of the 18th century. (R. D.).

experiment for himself. The weather has been very warm for the last ten days and I am in expectation every day of seeing the robins, blue birds, & other early spring visitors. I was out in the country last Friday, and almost every step I took "off" a turtle tumbled from a log, or a frog jumped into the water, while I was almost eaten up by the gnats. The blue wing teal passed me but not withstanding all my efforts, obstinately refused to give my dog a chance of showing his skill in bringing birds out of water. However I know where they stay & will try & kill them before long.

For want of other objects I have commenced to draw the sternal and shoulder apparatus of our birds, a pretty large collection of which I have been making for a year past. As soon as I can do them pretty well I will send you on a specimen. I find that in many cases I can distinguish species of the same genus from each other, and always genera. I have no doubt that some doubtful or difficult species may be identified by the differences in the shape of the Sternum, & Clavicle. Have you heard from Mr. Lyon of Bedford yet about the money he owes you? I was asking about him the other day, of an acquaintance of his, who told me that he was as good as gold in all his debts, & expressed some surprise at his not having paid, as he generaly is very punctual. Last week I walked up to Pinegrove an iron works about sixteen miles in the mountains where resides the Mr. Ege [1] I have so often spoken about as the mighty Nimrod of our county. On my arrival I found a fine wild cat hanging in the stable which had been killed a few days before. On returning the next day I took the cat with me slung across my shoulders, and on reaching home after measuring & weighing it skinned it. I am in hopes of getting some more from there, as they promised to catch all they could for me. It was considered a pretty large one though some considerably larger had been killed. It is twice the size of the one I killed myself a year ago. Shall I send them on now or wait for some more to add to them. The ears were very much tufted, the tufts being an inch long. I gathered much respecting the habits of this animal which I will send you hereafter. The skin is as large as those you showed me in the box under your drawingtable, but it is somewhat stretched.

[1] Peter Ege, at that time proprietor of the Iron Works at Pinegrove, Pa., and a local hunter of renown.

I do not believe that those were larger than this of mine, and a cat of 36 inches may be considered very large. The dimensions were as follows: To root of tail 27½ inchs. To end of tail verteb. 33. Fore to hind foot, both extended 50 inchs. Height of ear externaly 3 inchs. Laterally 2½ Tufts 1. Circumference of body 13¼. The animal was exceedingly thin yet weighed 16½ lbs. Had it been fat it would have drawn 20 or more. It was also a male.

Have you received anything new lately, from Smith or any body else. Please let me know the dimensions & weight of your wild cat, and what you have figured since I left New York. The measurements of the cats taken by me are much fuller than I have given here I merely wished to give you some idea of its size. Please give my respects to Mrs. A., your children & such of my acquaintances as you may chance to see, and believe me.

Your affectionate Pupil

Spencer F. Baird.

P.S. I forgot to say that I had a fine steak of the wild cat broiled and it tasted like a tender piece of fresh pork. I will certainly eat the whole of the next one obtained. I intend to taste all the Quadrupeds inhabiting this part of the country.

S. F. B.

[Superscription] John James Audubon Esq.
No. 86 White St.
New York
N. Y.

AUDUBON TO BAIRD.

New York, Feby. 10, 1842.

My dear young Friend.

It is about half an hour since I had the real pleasure of receiving your letter of the 8th inst. and my earnest thanks to you for it and its contents; to all of which I will try to answer at your request.

That Beautiful Carlisle, its surrounding hills bordering its valleys, all within the bosom of quiet nature should appear to you as a small affair when compared to our largest city in the Union, is not at all remarkable, but let me ask you the following questions. Did you

meet all your dear Parents and Friends quite well? Did they not receive you with the kindest of welcomes? Were not their *hearts* and feelings towards you the same as ever? Surely all this was fact, and being so, would you not after all prefer *Little Carlisle*[1] than *Great New York* with all its humbug, rascality, and immorality? Surely or do I mistake your nature sadly, you do! It is now a good long time since I was young, and resided near Norristown in Pennsylvania. It was then and is now a very indifferent place as compared with New York; but still my heart and mind oftentime dwell in the pleasure that I felt there, and it always reminds me that within a few miles of that village, my Mother did live, and it was there also that my good fortune led me to know and to marry the excellent Wife I have yet, at whose hands yourself have tried to be rendered comfortable. Say what you will, "there is nothing like home." But to change the subject, I trust that in good faith you have not spoken of us to your good family in higher terms than we deserve. We have liked you because we have seen that you deserved to be liked, and I hope with the truest sincerity that we will be enabled always to like you equally. Few men were more disappointed at not hearing sooner from you than your Friend, Docr. Goldsmith,[2] and good Major LeConte,[3] all of us, in fact, have wondered oftentimes what could have become of you, but now that I know of your being safely ensconced at "Dear Sweet Home," I will let the news fly townward. I wish I could be with you, if only for one week, for I then imagine that between your friends of the mountains, yourself, and myself, we could Tree a "Catamount" and soon untree him. The tugging part of that far-famed animal, I would cheerfully give up to your youthful shoulders, but not so with the figuring of it, yet for a while. Is there such a Beast in existence? Do let me know as soon as you can. I am heartily glad that you have procured a wild cat from the mountainous part of Pennsylvania, and that you have preserved its skin, which I beg of you to forward as soon as you please, along with whatever other quadrupeds you may have in hand, that we may say more on those Beasts of the Central

[1] In 1842 the population of Carlisle was about 4400.

[2] Dr. Middleton Goldsmith, born 1818, died Nov. 26, 1887.

[3] John Eatton LeConte, born 1784, died 1860. A naturalist who in early life served in the corps of army topographical engineers with the rank of major. He was father of John L. LeConte of Philadelphia, the distinguished entomologist.

States, than has ever been before told. Do send me all you know of the habits, habitats, etc. of said Wild Cats, and any other animals. The tufts of the ears of your specimen must surely prove to be an exception to the Rule, as mine, which is a very fine one, had these ornaments only half the length of those of the one you have procured. The measurments of mine are as follows: from nose to end of scull following the facial curvatures of the head, six inches, Ditto, to end of ear, 8 inches. Ditto to root of tail 30 inches. tail (vertebrae) 5 inches. Ditto to end of hairs 5½ inches. Fore foot stretching leg and nose, 7 inches, hind foot do., leg and tip of tail 7½ inches. Hind feet webbed within ⅛ inch of the claws; Tufts on the ear ½ inch long, breadth of ear 1⅛ inch, anterior heighth of ear 1¼; length of neck, 4 inches. Weight 17 lbs. avoirdupois. VERY FAT. From root to root of ears taken laterally 3 inches; from tip to tip of ears, laterally, 7½ inches, breadth of head at anterior part of ears, 4 in. "The spot" on the posterior part of the ears is not "a spot," but represents a (undecipherable) portion of almost ⅛ of a globe. You cannot draw any one subject without improving. All I have to recommend to you is to work slowly, and *constantly*, that is, whenever you can! Since you left us, I have drawn, or, perhaps, finished, the wild cat, the Canada Lynx, two *Arvicola Hispidus*,[1] two *Sorex Parvus*[2] (a very rare species hitherto unknown in the state of New York) one short eared cat squirrel, (it may prove a different species from the one with tufted ears) and a white hare, *Lepus Americanus*. I have now in hand, alive, one fine *Mustella Erminea*,[3] two *Arvicola pennsylvanica*[4] and two *Hispidae*. Mr. Smith writes to me from Houston (Texas) that he has two fine Peccaries, two Lynx, two Cat Squirrels, two Bats etc. etc. etc. etc. But I will let you know when I see these things. I have heard from Quebec from a Mr. Martin[5] who is a great collector there, that he has "Black Hares,"

[1] *Sigmodon hispidus* Say & Ord.
[2] *Blarina parva* (Say).
[3] *Putorius cicognanii* Bonap.
[4] *Microtus pennsylvanicus* (Ord).
[5] John Martin, Jr., a chronometor and watchmaker, also a naturalist, who lived in the lower town of Quebec. Sir James M. LeMoine writes me that when Audubon visited Quebec in 1842, Martin invited the naturalist to stop under his roof during his stay in the city, and when he took his departure presented him with a copy of his 'Birds of America.'

Marmots, Squirrels, Bats, and a hundred other things, which he will send me in the spring.

Look out for Martens, and try to find me some yourself! I am glad that you find wild cat meat pretty good, as it corroborates the sayings of many others, who pronounce it equal to young veal.

Let me say to you ("en passant") that your handwriting is considerably improved, and depend upon it that your attention *to Drawing* will soon enable you as of "copperplate." Go ahead!

I now wish you earnestly to offer our joint respects, regards, and best wishes to all your family and friends, and to believe me always,

Yours, most truly,

John J. Audubon.

86 White Street.

P. S.

Thank you for what you say of the Bedford gentleman. When I write next, I will mention him at greater length. I wish you could let me know whether we could procure first rate peach trees from your vicinity, and how much 50 of them would cost. I should like to have them assorted, soft, and clings yellow, or red, or blood-red. We wish to plant these as early in March as possible, if young trees, two years old could be had, we might, perhaps, have fruit on some of them during the next summer? Try what you can do for your New York friend.

[On the outside of the letter is the following:] I will make up a box for you in a few days, and send it to you through Mr. Chevalier.

BAIRD TO AUDUBON.

Carlisle, March 4th, 1842.

My dear Mr. Audubon

"The winter is over and gone, and the voice of the Turtle is heard in the land" So king Solomon said some thousand years ago and so says your humble servant now. Spring has opened in earnest, the Robins, Blue Birds, Blackbirds, are all here in great numbers. Wild Geese were heard "Honking" for the first time this afternoon, and the Golden crested Kinglet has begun to come into the gardens. Mallards, Green winged Teal, Baldpates, abound in our streams and in short every thing proclaims the arrival of the most welcome season of the year. In illustration of

all this I send you a paper, containing an article bearing on the subject written by a young cousin of mine, W. M. Penrose, one whose greatest ambition is to write as well as Mr. Audubon. I have delayed answering your letter, in order to make inquiries about the Peach trees. I am sorry to find that our Nursery men have none now good for anything, having sent almost their whole stock to Philadelphia last season to supply the demand in the Jerseys. They console me however by saying that they will have plenty next year.

Before I proceed further let me tell you of two ideas I have in my head, being expeditions in search of Quadrupeds and Birds. One is to the eastern shore of Maryland. I have some relations there who want me to come to see them very much. As my mother is about to visit Washington shortly, passing of course through Baltimore I have some notion of letting her take my baggage to the latter place and set out for it on foot. It is seventy-five or eighty miles from here, and I can walk there in two or three days, and by taking the steamboat, I shall be landed within a few miles of my destination, which is Read's Creek a branch of Chester river. Squirrels are very abundant, particularly the stump eared cat, and if I go I shall be able to procure plenty. My going however is uncertain, depending on several contingencies. The second "Idea" is of a trip to Maine in July with a friend of mine in college who lives there and who insists on my accompanying him home. He lives in New Gloucester and is forty or fifty miles only from the White Mountains of New Hampshire, where he has a sister living within a few miles of the celebrated "Notch." He gives the most glowing description of the abundance of birds and beasts around him, and promises me that I shall have the assistance of every person within thirty miles circuit. Another inducement in his eyes at least, is that I shall be Bridesmaid or something of that sort to a sister of his, who is to be married then, and that in virtue of my office, I shall kiss all the girls in the room, all insured to be pretty too. But I know that you will give me credit for saying that I would rather get a new rare Quadruped or Bird than kiss all the pretty girls in creation. Miss—— not excepted. I should like to go very much, but I do not know if I shall be able. The recent pecuniary difficulties in Pennsylvania have affected our family as well as thousands of others whose wealth consists in stocks of different kinds.

No one knows what is to come but if my mother can spare me fifty dollars, which will be about the expense of the trip, I shall go, and return in a few months heavily laden with the spoils of science.

During a visit made some time ago to Pinegrove, an iron establishment of Mr. Ege's I obtained some interesting information of habits of our Wild Cat. Mr. Ege has been a hunter from his earliest youth to the present advanced age of between sixty and seventy, and now though not as active as he was once wont to be, yet he will have to be a pretty hard rider who will take the brush from him. Of his daring feats of horsemanship many feats are remembered and related by the companions of his adventures. Seven miles from Carlisle in the gap of the South Mountain is a heap of loose stones about two hundred feet from top to bottom, formed by the debris of the rocks above. Once after having pursued a deer for a whole day the animal ran to the foot of this place, and dashing up the hill was immediately followed by Mr. Ege. The deer having reached the top decended half way, ran along the hill for forty or fifty yards, and reascended to the sumit, still pursued however by the gallant equestrian. The stones which were mostly loose rattled down from beneath the horses feet, a single slip would have been almost certain death yet he rode over the place as easy and unconcerned as if he had been on a smooth turnpike.

The wild cat is becoming more numerous every year; few are caught by the hounds, and still fewer are caught in traps or shot, so that in time they will become almost the only animal of the chase, except foxes, the deer having become very scarce from several causes. One of these is the severe winter of 1839 when the snow having a depth of fifteen or twenty inches with a hard crust, the deer as soon as driven into anything faster than a walk, broke through and were held as in a trap; thus allowing men with snow shoes on, to walk up and kill them with clubs. One monster murdered twenty in a day! The wild cats also aid in the work of destruction, killing great numbers every year, by dropping on them from a tree, or spring from the ground, when in the act of drinking or feeding. One which I killed a year ago had its stomach filled with deers hair. A man some years ago had been out hunting deer, and towards noon stopped near a piece of rich Bottom, in order to eat his dinner. Presently he heard a great crackling in the thicket not far from him and looking towards the place saw a

deer coming to him behaving in a very singular manner. To seize his rifle and kill the deer was but the work of a moment, when walking up to the animal he was surprised to see an immense wild cat clinging to its neck with his teeth buried in the flesh. The cat on seeing the man let go his hold and walked round the deer loth apparently to leave it, and, remained long enough to allow the hunter to load his rifle and stretch him dead also. They are hunted on horse back with a large pack of hounds at Pinegrove. They will tree after running a few miles when it is generally easy enough to get them. Although many stories are related of their ferocity, they are a cowardly animal. Some one of the hunters climbs the tree and with a stick forces the animal to leap from the limb on which it may be recumbent, when its career is soon ended by the hounds, which stand open mouthed under the tree. They have been known to jump from a height of forty and fifty feet uninjured. When they do not tree they make for their holes in the rocks, which should they reach, they are safe. The one obtained this winter was caught within ten feet of its hole. It had its claws nearly worn to stumps from having lived among the stones. Some years ago a large cat was killed and thrown into the crotch of a pretty tall tree. Some weeks after, another cat was trailed to, and killed from the same tree, on looking at the first cat, it was found nearly eaten up, evidently by the second individual, as none but an animal of that species could have reached it. The following are the Measurements of those obtained a year ago and last winter. No. 1 is the male one shot Nov. 30. 1840. No. 2 brought from Pinegrove Jan. 1842. Measurements in inches.

No. 1 was *very* fat, a coat of it every part of the skin. weight 12½ lbs. No. 2 was *very* thin exceeding by weight 16½. So much for the measurements. If you wish the descriptions, from the fresh

	1.	2.		1.	2.
To end of tail (verteb.)	29½	33	From end of fore leg to end of hind leg both extended.	42	58
Tail (verteb.)	5½	5½	extent of ears across crown, tips of hair not included.	8½	8½
Extent of fore leg.	29½	33	Circumference of the chest part of body (middle).	17	13½
Extent of hind leg.	28½	33½	From one fore foot to the other across the shoulders.	30½	38½
Heighth of ear anteriorally	2½	3	Circumference of neck close to head.	8	8½
Heighth of ear inside (laterally)	12½	13½	Circumference of head before ears.	10	
Circumference behind fore leg.	14	13½	Circumference of wrist.	3½	
Head from nose to occiput.	5½	6½			
Elbow joint to claws of fore leg.	9	10½			
From Heel to claws of hind leg.	6½	6½			
Tibia.		9			
Carpus to claws.		4½			
Longest whisker.		4			
Weight.	12½	16½			

specimens, please let me know. I will send the animals on in a few days & will advise Mr. Chevalier thereof by letter. So much for "Wild Cats."

I had quite an adventure the other day. A countryman came in and told me that he had nearly fallen into a deep hole on the top of a hill on his farm, and asked me to come out and see it. I did so and having procured lanterns, we went to the place. We descended the hole in a nearly perpendicular, but zig-zag direction for about twenty-five feet, when we found ourselves at the bottom, on a ridge separating two large and deep chambers of the cave. These we explored and on the bottom of one of them, found the nearly perfect skeleton of what had been an immense bear. The skeleton was in pretty good preservation, but must have been there a long while. The scull was deficient in all the incisors, one upper canine and several molars. A few carpal, metacarpal, tarsal, and metatarsal, with all the phalanges but one, were wanting. Also one or two of the vertebra and the whole tail. On putting it together I find that the vertebral column consisting of 26 vertebra, together with the head and pelvis attached measures 4½ feet. It must have been at *least* five feet long and three feet high, perhaps more, as no account is taken of the tail. Will probably go down again, to find if possible the missing parts. I am much obliged to you for what you say about sending me a box of bird skins. If you have an old skin of the fox squirrel in feruginous pelage, which you do not want please send it. I will get some skins of our cat squirrel soon as they come out of their winter quarters, so as to be shot. Tell the Major that I caught a small beetle some weeks ago and have him duly stuck in the box. I have not seen any since but hope to do so when I shall catch them with all zeal. Tell him I shall not let him give up his promised visit next summer. Any items from time to time respecting animals figured, obtained or heard of will be thankfully received, as the newspaper folks say. Please give my best respects to your kind family, Dr. Goldsmith, the Major, and any others you see of my acquaintance, and Believe me.

Yours very affectionately

Spencer F. Baird

[Superscription] John James Audubon Esq.
86 White St.
New York.

BAIRD TO AUDUBON.

Carlisle, May 3d, 1842.

My dear Mr. Audubon

I have been in some doubt as to where this letter should be addressed, since "86 White St."[1] will not reach you, and you must by this time be snugly fixed I hope in your beautiful place up the River. Do not laugh therefore if I prefix "Formerly" to the old superscription. We have had nothing new or interesting in any department here lately, nothing having been plenty yet except ducks. Of these last I have killed a great many; as many as eight, ten, or twelve in a day, which you know are pretty large numbers for such a locality. I have not been out yet without killing at least two or three. Mallards, Black ducks, Baldpates, Summer ducks, Sprig tail, Golden eyes, Gooseanders and Black heads were the most abundant. The other species which occured are Shovelers a few, Ring neck two or three flocks, South southerly one, Buffel heads a number, Hooded Mergansers, eight or ten pair, Green wing teal forty or fifty, and Blue wing Do. one flock of more than forty, and several stragglers. No Ruddy ducks have yet made their appearance as last spring. Of these which I have shot, I prepared the heads of forty or fifty for myself & Dr. Morton,[2] and stuffed but two or three. I have drawn the Sternums with the accompanying apparatus, viz. Scapula & Clavicle, of a good many birds, especially the water birds. It is my intention to prepare three of all our birds. I have drawn the sculls of several of our birds, five or six ducks, Loon etc. Also some Quadrupeds as Florida *Neotoma*, Chickaree squirrel, common Rabbit, Mink and Muskrat. I think them to be the best studies in drawing I could have.

Quadrupeds are very scarce now, from what cause I know not, I have not seen more than two or three bats, and very few glirine animals. I have been able to procure only a few *Arvicola* as yet,

[1] Where Audubon and his family resided, after returning from his last visit to England, in the autumn of 1839, until his removal to "Minniesland" in the spring of 1842.

[2] Dr. Samuel George Morton, a once prominent physician and President of the Philadelphia Academy of Sciences, born Jan. 26, 1799, died May 15, 1851.

but I hope to get more soon. I have made arrangements with several men & boys in various parts of the country, fifteen twenty or thirty miles off in several directions, to secure a number of squirrels, weasels, and anything else. I have heard a good deal of a fox entirely black, on our mountains, and have been promised one before the summer is over. I do not know whether I shall be able to go to Maine & New Hampshire in the summer, if I can afford it I shall go, if not I must stay at home and get what I can here. I suppose that the First Number of the "Quadrupeds of North America" is out by this time, I hope that it will be hailed by a large list of Subscribers, and will do what I can for this desirable end. Please let me know in what order the animals will appear, and what ones are in the No; also any other news in the zoological line.

Vegetation is wonderly advanced with us, and if no frost or other casualty interferes, the abundance of fruit and everything else will be unparalleled. All the fruit trees are loaded, and the young peaches, cherries, & even apples and pears are well formed. Wheat and rye are in the finest condition, the lettuce is in full head. By the by while I think of it, what do *you* think of several swan having been killed, so far [in] the interior of this state as Chamberburg.[1] There is less water there than here, and a flock of fourteen kept about the town for several days. A good many Wild Geese have also been killed all over our county, in the various streams about. I must stop now or my letter will be too late for the mail. Give my best respects to your kind family and any of our mutual acquaintances, and Believe me

Your Affectionate Pupil

Spencer F. Baird.

P. S. You ask me if I have heard from Dr. Bachman.[2] I have not, but nothing would give me greater pleasure than receiving a letter from him, excepting one from yourself.

[Superscription] John J. Audubon Esq.

formerly, "86 White St."

New York.

N. Y.

[1] Capital of Franklin County, 157 miles west of Philadelphia.

[2] Rev. John Bachman, D. D., born in Rhinebeck, N. Y., Feb. 4, 1790, died in Charleston, S. C., Feb. 24, 1874.

BAIRD TO AUDUBON.

Washington August 4th. 1842.

My dear Mr. Audubon

I received your letter yesterday and I take this opportunity to return you my thanks for the very flattering letter of recommendation enclosed in it. I have put it in the hands of my uncle who will use it in some way to my advantage. I called on Mr. Cushing[1] at the Capitol yesterday morning and asked him about the Presidents letter. He seemed much surprised to hear that you had not received it yet, said that it had been written a week ago, and assured me that he would attend to it without delay. The weather has been delightfully cool and pleasant here since last Sunday, the only drawback being the great quantity of dust. Have you ever seen the Red variety of the Northern Gray Squirrel. My brother tells me that during a residence of a year at a school in Cecil Co. Maryland he frequently saw & shot a so called "Fox squirrel," entirely different from the one of that name in Carlisle Pa. a specimen of which you have. The Gray Cat squirrel is quite common here, and the difference between it and this last was very obvious. It consisted in invariably smaller size, habits, and a different Physiognomy. The color varied from a slight tint to a deep fox red. The school he was at lay about six miles from Port Deposit on the Susquehanna. Please tell Major or John LeConte to write to me if you see them and Believe me

Yours Sincerely

Spencer F. Baird

[1] Caleb Cushing, statesman, born Jan. 17, 1800; died Jan. 2, 1879.

GENERAL NOTES.

The Masked Duck in Maryland. — It may be of interest to readers of 'The Auk' to know that a specimen of the St. Domingo or Masked Duck (*Nomonyx dominicus*) was taken near here on September 8, 1905. So far as I am aware this is the fourth specimen to be recorded as having been taken within the limits of the United States.

The bird in question, an adult male, was taken by a student of Delaware College, Mr. J. C. Smith of Elkton, Md. Mr. Smith, accompained by Mr. John Mackall, was out rail-shooting about four miles from Elkton, Md., early in the morning of September 8, when the bird was secured. Mr. Smith reports that it was not wary and that it was secured at the third shot, the other two causing it to fly but 150–200 yards each time. The bird was brought to me for determination and after satisfying myself as to its identity I preserved its skin. This has recently been deposited in the U. S. National Museum, at Washington, D. C.— C. O. HOUGHTON, *Entomologist and Asst. Professor of Zoölogy, Delaware College Experiment Station, Newark, Del.*

Southeastern Michigan Records.— WILSON'S PHALAROPE, *Steganopus tricolor.* A specimen of this species was seen by the writer May 5, on a little mudhole in Ecorse Township, Wayne County, this State. It was in company with a flock of Yellow-legs, and though I watched it for some time I was unable to collect it. However, on May 12, the same or a like bird was observed again and this time I secured it. It proved to be a female in full plumage and is now No. 502 in my collection.

WHITE-RUMPED SANDPIPER, *Actodromas fuscicollis.*— The rarity of the records of this species here seems to make it worth while to record the taking of three out of six seen by the writer on the same ground as mentioned in the preceding note, June 2.— P. A. TAVERNER, *Detroit, Mich.*

Hudsonian Godwit (*Limosa hæmastica*) **in Ontario.**— May 13, 1905, I took a male of this species in high plumage on the east shore of Point Pelee, Ont. It is now in my collection, numbered 147.— P. A. TAVERNER, *Detroit, Mich.*

The European Turnstone in Massachusetts.— An adult female Turnstone which I collected on Monomoy Island, Mass., on Sept. 8, 1892, Mr. Oberholser agrees with me in identifying as *Arenaria interpres.* As an adult male and two young Turnstones in my collection, taken by Mr. A. H. Dunham at Nome, Alaska, are intermediate between *A. interpres* and *A. morinella*, I have no doubt Mr. Oberholser was right in suggesting that the latter is merely a subspecies of the former (Osprey, Vol. IV, February, 1900, p. 96).— LOUIS B. BISHOP, *New Haven, Conn.*

A Ruffed Grouse near Camden, South Carolina.— Late in the afternoon of December 27, 1904, a Ruffed Grouse (*Bonasa umbellus*) was shot a couple of miles from Camden, South Carolina, by Channing Wiley, Esq., a visiting sportsman, and within an hour was in my hands. I am sorry to say that it could not be preserved, since Mr. Wiley contributed it to the table of an invalid.

Camden is far outside the usual range of this bird in South Carolina,[1] and there seems to be no record of its appearance in the State at such a distance from the Alleghanies. More than this, the town contains several resident sportsmen of many years' experience, and none of them whom I have met knows of another occurrence of the Ruffed Grouse in that vicinity.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

Note on the Crop Contents of a Nestling Mourning Dove (*Zenaidura macroura*).— The crop contents of a nestling of this species taken at Boxford, Mass., on August 12, 1905, were sent to Prof. Beal at Washington, and the following interesting report was returned:

"Contents of crop and stomach of nestling *Zenaidura macroura* from Boxford, Mass.

70 seeds of buckwheat (*Fagopyrum fagopyrum*), 40 %.
3 seeds of smartweed (*Polygonum aviculare*), 1.5 %.
171 achenes of ragweed (*Ambrosia artemisiæfolia*), 12 %.
17 seeds of blue curls (*Trichostema dichotomum*), 2 %.
17 seeds of a violet (*Viola* sp.) 1.25 %.
89 seeds of Timothy (*Phleum pratense*), 3 %.
836 seeds of green and yellow Foxtail (*Chætochloa viridis* and *C. glauca*), 35%.
1 seed of *Paspalum* sp. 0.25 %.
Several fragments of seeds which may be the remains of 'pigeon milk,' 2 %.
Bits of a milliped, 1 %.
1 snail and fragments of another, 1 %.
Bits of egg shell, probably from nest, 1 %.
Animal matter, 3 %.
Vegetable matter, 97 %.

Gravel was 10 % of the entire contents.— *W. L. McAtee*, Dec. 2, 1905."

It would seem, therefore, that 'pigeon's milk' does not constitute the entire food of the young during their whole stay in the nest.

As a help in estimating the age of the bird, it may be stated that on July 16, 1905, the nest, containing one egg, was found at Boxford, by Mr. F. H. Allen.

The nest was in a white pine, 19 feet from the ground, in a crotch close to the main trunk. On July 22, Mr. Allen and I found two eggs in the nest. On August 12, one of the adults was seen sitting on the nest, and it did not

[1] See, especially, Loomis, Auk, III, p. 483.

move until Mr. Allen had climbed within four feet of the nest. Then there was a sudden avalanche of birds, showing much white in the tails. The old bird struck the ground within 15 yards of the tree and disappeared in the bushes in the usual wounded-bird style. One of the young birds lost itself in the bushes near at hand, while the other remained motionless on the open ground within ten yards of the tree. Here it could be discerned with great difficulty owing to its coloration. I easily caught the bird, and was interested to find its crop, covered mostly with bare skin, bulging with solid contents whose analysis has been given above.

The measurements of the dried skin are: length, 7.10 inches; wing, 4.10 inches; tail, 2.15 inches.— CHARLES W. TOWNSEND, M. D., *Boston, Mass.*

Long-eared Owls resident at Flushing, Long Island, N. Y.—Some time ago I wrote (Auk, XIX, 1902, p. 398) regarding the Barn Owls which formerly occupied a church steeple on Bowne Avenue in Flushing, Borough of Queens. It may be of interest to you to know that within a few hundred yards of my studio here on Bowne Avenue, there are now roosting six Long-eared Owls (*Asio wilsonianus*). This family of owls has been in and about this neighborhood for several years. They breed here, and this last season they wintered here. Probably they have done so all along.

I have examined a number of their pellets and found in them nothing but the remains of mice with now and then the bones of an English sparrow. If this is the regular diet of these birds, which from different authorities consulted I infer to be a fact, it might be well to plant a colony of Long-eared Owls in every city and village in the United States.

The birds roost in the thick foliage of an evergreen tree, but when watched too closely do not hesitate to leave the tree and fly about in broad daylight, and the manner in which they dodge obstructions when approaching their former perch, makes it evident that their eyesight is very good even in daylight.— DAN BEARD, *Flushing, N. Y.*

Nest of Saw-whet Owl at Bridgewater, Mass.— Upon Patriots' Day (April 19, 1906) in Bridgewater, Plymouth County, Mass., I found a nest of the Saw-whet Owl (*Cryptoglaux acadica*). An old Flicker's excavation, about 16 feet from the ground in a decayed poplar stub, furnished the site. In the bottom of the excavation was an old squirrel's nest, and a quantity of hair and feathers from small animals and birds evidently killed and eaten by the owl. Upon this mass the eggs, 4 in number, were placed.— ARTHUR C. DYKE, *Bridgewater, Mass.*

Uranomitra salvini in Arizona.— In a collection of bird skins made for me by Mr. H. W. Marsden in the Huachuca Mountains of Arizona in the summer of 1905 I found a young female hummingbird, taken at Palmerlee, Cochise County, on July 4, which I was unable to refer to any species recorded in the A. O. U. Check-List. Mr. Oberholser kindly compared this skin with the hummingbirds in the National Museum in Washington and concluded that it was the young of *Uranomitra salvini*

(Brewster). (Brewster, Auk, X, July, 1893, p. 214.) Mr. Brewster very generously lent me the type — an adult male — and only known specimen of *U. salvini*, and I am quite confident my bird is the same, and that the species is a valid one.

My bird resembles the type very closely, differing from it only in the following particulars, which, with the possible exception of the color of the bill, are what were to be expected in the young. The blue iridescent feathers of the crown are duller; the green back duller with the iridescent feathers more restricted; the lower back paler; the upper tail-coverts and rectrices more bronze; the iridescent blue and green feathers of the sides of neck and breast duller, fewer and more restricted; and the sides of the body brownish gray instead of bright green. The feathers of the upper parts, especially the lower back and rump, are edged with pale rusty, as is usual with young hummingbirds. Both have the white lower tail-coverts, clayey buff wash on throat, and pale tips to the rectrices. The bill of the young bird is slightly broader, the maxilla darker, being the same brownish black at tip and becoming dull reddish brown only at base; and the mandible paler and more yellowish except at tip. The measurements of the two are practically identical.

Nacosari, where Mr. Brewster's bird was collected, is only about 80 miles from Palmerlee; while Mr. Oberholser informs me that *U. verticalis* (*quadricolor*) its nearest geographical ally, has not been taken north of Durango.

Thanks to Dr. Allen, I have compared my skin with adults and young of other members of this genus in the Elliot collection of the American Museum of Natural History, and find it much smaller than *U. verticalis* and resembling it in plumage only very slightly. It more closely approaches *U. cyanocephala* and *U. cyaneicollis*, but has a longer bill and shorter wing than either; cerulean blue crown, and on sides of neck, instead of purplish blue, bluish green or green; bluish green upper back instead of golden green or green; and white under tail-coverts. Mr. Oberholser tells me it differs in a similar manner from *U. violiceps*.

My thanks are due to the above ornithologists and to Mr. D. G. Elliot and Mr. J. H. Fleming for their assistance in identifying the bird.

Measurements in inches.

	U. salvini No. 24125 Coll. W. Brewster	*U. salvini* No. 13964 Coll. L. B. Bishop	*U. cyanocephala* No. 10203 Coll. J. H. Fleming
Length		4.25	
Extent		5.50	
Wing	2.07	2.11	2.32
Tail	1.27	1.28	1.39
Exposed culmen	.88	.84	.71

— Louis B. Bishop, *New Haven, Conn.*

Nesting of Crossbills in Nova Scotia.— During the past winter, which was very mild and open, numbers of American and White-winged Crossbills were found nesting in the vicinity of Wolfville, Kings Co.

The first nests discovered were those of the American Crossbill (*Loxia curvirostra minor*) Jan. 31, three in number. Of these, two contained young, just hatched. The others held three eggs, advanced in incubation. These nests were not far apart, in a small, open grove of spruce, fir, and hemlock, and were similarly placed on horizontal limbs of spruces, from twenty to forty feet from the ground and well out from the trunk. Some fifteen or twenty of the birds were constantly feeding about this grove, and by their noisy chatterings and restless movements attracted my attention to them.

Though hardly expecting to find them nesting at so early a date, I nevertheless watched them closely. Soon I saw a single bird leave the feeding flock. Darting away through the trees he disappeared among the lower branches from which he soon emerged and joined his companions. A careful search among the branches into which this bird had flown, revealed a nest, well concealed amid clustering sprigs of the evergreen. The sitting female carefully watched my movements as I approached the nest and upon my reaching out to touch her raised the feathers on her crown, opened her bill, and in short made herself look quite ferocious. Finally sliding off the nest, she flitted about within a few feet of me, keeping up an angry chirping, in which she was soon joined by her mate. This nest was some twenty feet up, and fully ten feet out from the trunk, saddled on the horizontal limb among clusters of the foliage and protected from above by overhanging branches. The other two nests were discovered in the same way — by watching the feeding flock, and noting the movements of birds leaving it from time to time.

During the following months, many other nests were found. Great diversity in choice of nesting sites among individuals of both species was noticed to exist. Nests of the American Crossbill were found in spruces, firs, and hemlocks at elevations ranging from ten to eighty feet. Most nests were found in spruces of large growth and with thick, spreading branches in open woods. Others were found in dense groves of evergreens in the little bunch of foliage at the extreme top of otherwise denuded firs, while still others were found concealed in dead trees of the same kind among the hanging moss and twigs, close to the trunk. A few nests were found in young hemlocks in the little clusters of twigs that sprout out at the junction of the branches and trunk.

The character of the woods did not seem to affect the choice of the birds much, provided that cone-bearing trees were near at hand. Thus nests were found in dry open upland woods as well as in the low dense growths of the swamps, and in woods of mixed growth as well as in evergreens alone.

Nests of the White-winged species (*Loxia leucoptera*) were found in

spruces only, though some were in trees of large growth and seventy feet from the ground, while others were placed low in small bushes.

During the period of incubation the sitting females were observed to be fed by the males, in the same manner that the young are fed by their parents — that is by the disgorging of the contents of the crop into the open mouth of the bird to be fed. When bringing his mate food in this manner the male crossbill would announce his coming by loud pipings, and perching upon a near by tree would continue his excited chirpings some minutes and then fly direct to the nest. Often after having thus fed his mate, he would circle in the air about his home on outstretched flapping wings, giving vent to a perfect ecstasy of song.

The nests of both species are composed chiefly of twigs and beard-moss. Sometimes feathers, strips of decayed wood and bark, grasses and plant down, were added. On the whole the nests are fairly well built and compact, though quite a difference in this respect is noticeable in different cases.

The nesting period of these birds seems very extended. Thus on Jan. 31, nests were found with young. The birds have been nesting ever since, and at this date (May 7) flocks of full fledged young can be seen feeding about the woods, while nests with eggs are still to be found. Some years ago a nest of the American Crossbill was found on August 4 containing newly hatched young.— HAROLD F. TUFTS, *Wolfville, Nova Scotia.*

Breeding of the Savanna Sparrow (*Passerculus sandwichensis savanna*) **in Southern New Jersey.**— On July 8, 1903, while on a short trip along the coast of southern New Jersey, I was surprised to find a pair of Savanna Sparrows breeding at the extreme lower end of Seven Mile Beach, Cape May County. The nest was situated on the ground in a dry, sandy, open space back of the sand dunes, and was concealed by weeds and drift. It contained three young birds a few days old and one infertile egg. The old birds were seen excellently at close range through a field-glass and thoroughly identified. Being without a gun neither of them was secured, but the nest, egg and one young were taken, the remaining fledglings being left in an improvised nest. The young bird was kept alive for a day or two longer and then preserved in formalin. His plumage is sufficiently developed to show its general coloration, and this, and the form of the feet, together with the nest and egg, aside from the observations made in the field, are sufficient to render the identification certain.

The southernmost limit of the breeding range of the Savanna Sparrow on the Atlantic coast is given by Ridgway (1901) as Connecticut, but there are specimens in the Museum collection taken in summer on Long Island, New York, as follows: Centre Moriches, May 30 (four adults); Good Ground, July 1 (one adult); Gardiner's Island, Aug. 12 (1 young). The species has also been recorded by E. C. Thurber in his List of Birds of Morris Co., N. J., as breeding in the vicinity of Morristown, in northern New Jersey, an inland locality. The present record carries the known breeding range about 120 miles still further south.— W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Bachman's Finch in Montgomery County, Virginia.—On the afternoon of May 2, I was in an open pasture on a hillside near Blacksburg, Va. Passing a small brush heap, a sparrow that I took for a Field Sparrow at a casual glance flew to a small tree about twelve feet from the ground. As it lit, it sang, and although for years I had not heard that song, I was at once taken back to the pine woods near Charleston, S. C., where, as a youth I had known so well Bachman's Finch (*Peucæa bachmani*). I walked under and around the bird, which sat motionless only two yards overhead, and examined it closely; finally it flew to a small clump of bushes, and by moving quietly I got within a yard of it and easily verified my recognition of it as Bachman's Finch. As I had a good series of specimens I forbore to kill the bird, for my identification of it was complete and its song saved it. As soon as I returned home I examined my specimens and amply satisfied myself. Mr. Jno. W. Daniel has noted this bird as breeding near Lynchburg, Va., but still I think this worthy of note.

I see that Mr. Nathan C. Brown has taken Bachman's Finch in Camden, S. C., on January 25. I have always thought the bird a winter resident on the South Carolina seaboard, for I have taken it in Berkeley County in late December, and Mr. Wayne also notes it, I believe, near Charleston in January.— ELLISON A. SMYTH, JR., *Va. Polytechnic Inst., Blacksburg, Va.*

The Rough-winged Swallow and Duck Hawk near Springfield, Mass. — *Stelgidopteryx serripennis.* A Rough-winged Swallow was captured by William Dearden in Longmeadow, near Springfield, May 17, 1906. There is no previous record of the occurrence of an individual of this species in the Connecticut Valley in Massachusetts since 1851.

Falco peregrinus anatum. About forty years ago much interest was manifested among ornithologists and others by the fact being made known that the Duck Hawk breeds regularly among the nearly inaccessible clefts that are to be found in the vicinity of the peaks of Mounts Tom and Holyoke that arise from the trap rock range that crosses a portion of the Connecticut Valley some fifteen miles north of Springfield, and from that time to this, nests have been seen there almost every year. In 1905 nearly fledged young were found there the last of May, and this year near the same place another nest was discovered containing four eggs. In recent years this portion of the mountain range has been made accessible by reason of the construction of lines of electric railroads, and hundreds visit the region of the Duck Hawk's breeding place where one person did in the sixties, but notwithstanding this, they still continue to select this locality for their summer home.— ROBERT O. MORRIS, *Springfield, Mass.*

Occurrence of the Titlark (*Anthus pensilvanicus*) **in Maine, in Spring.** — On the afternoon of May 15, 1889, my brother, Mr. Ralph H. Norton, and I saw a flock of twenty-four Titlarks alight in a field of young grain,

on the outskirts of Saccarappa village, which forms the west end of Westbrook. My brother shot one of these birds (a female), for my collection, whereupon the others left the vicinity.

As changes have been wrought, since that date, it seems well to be explicit about the place. This was in the field owned by Capt. Isaac Quimby at a point close to Mechanic Street and about two hundred yards south of the street since accepted as Green Street.

The instance has been reported in Bulletin No. 3, University of Maine, p. 122 (Knight's Birds of Maine), but as I am not aware of another spring record for Maine, yet published, it has seemed desirable to give the particulars.— ARTHUR H. NORTON, *Museum of Natural History, Portland, Maine.*

The Titlark at Portland, Maine, in Spring.— The spring record of the Titlark (*Anthus pensilvanicus*) in Maine should include a solitary bird which I saw about half past three o'clock in the afternoon of May 10, 1905, within the city limits of Portland. It passed me close at hand, constantly calling and flying low in a southwesterly direction, near the north end of St. John Street, where there are vacant lots extending to open fields.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Carolina Chickadee in Southern Michigan.— Last winter P. A. Taverner and I were examining my small series of local Chickadees and among them found one bird that we were certain was *Penthestes carolinensis carolinensis*. Upon sending the bird to Washington for confirmation Prof. Ridgway returned it as a Carolina Chickadee, probably an immature male.

I secured this bird on July 17, 1899, in a small woodland in Ecorse Township, Wayne Co., Mich. As far as I can ascertain this is the first bird of this species that has been taken in Michigan. The specimen is number 283 in my collection.— BRADSHAW H. SWALES, *Detroit, Mich.*

A Great Flight of Robins and Cedar-birds.— Camden, South Carolina, was visited on February 3, 1905, by a storm of sleet and snow. At eight o'clock next morning the town had a wintry aspect, and the thermometer indicated only twenty-two degress. There was no sun, but the storm was at an end and the northeast wind was light. When I first looked out of doors, Robins and Cedar-birds were flying over in large numbers, going about west-northwest. It soon became evident that the flight was unusual, and at twenty minutes to nine o'clock I took up a position at a window from which I had an unobstructed view for long distances towards the east, north and west. Here for an hour and a half, pencil and paper in hand, I endeavored to count the passing birds.

The Robins flew in open order and were little more numerous at one time than another. The Cedar-birds, however, though many of them

also went by in open order, were mostly gathered in masses containing from twenty to four hundred birds or more each. They swept along very rapidly. Their largest masses suggested scudding clouds and were decidedly impressive. The Robins moved a good deal more slowly. Both species flew at altitudes varying from twenty to one hundred yards from the ground, and most of the birds passed within a distance of one hundred and fifty yards from my window,— none, I think, farther away than about an eighth of a mile.

At ten minutes past ten o'clock I was obliged to take up some work which was awaiting me. But I frequently looked out of the window after that hour, and could detect no diminution in the number of passing birds until after one o'clock P. M. All the afternoon they flew by in gradually diminishing numbers, a good many Robins tarrying for brief periods in the fields before my window. Throughout the day the direction of the flight was the same, and there was practically no retrograding: altogether I saw less than a hundred birds coming back, all Robins.

I found that I had counted a total of twenty thousand four hundred birds in the hour and a half, at least fourteen thousand of which were Cedar-birds. These figures are much inside the mark. Between ten minutes past ten A. M. and one o'clock P. M. twice the number of birds that I had previously counted must have gone by. A multitude had passed before I began counting. Ten thousand, at the lowest estimate possible, must have followed during the remainder of the afternoon. In the course of the day, therefore, many more than sixty thousand birds passed over that part of Camden which I overlooked. I believe that seventy-five thousand — fifty thousand Cedar-birds — would be too low an estimate. The path of the flight also extended south of my position at the window. I cannot say how far it extended, and I can offer no estimate of the number of birds which passed on that side.

As usual, Robins had this year become more common in and about the town with the approach of February, but there had been no indication of any massing for this flight. Cedar-birds had been common throughout the previous months of the winter. I had never seen them in large numbers, however, except on February 3 — the day before the flight — when I found some five hundred of them restlessly flying about a near by swamp. They all came together here at times in a dense mass, only to break up again into comparatively small parties. The two species were numerous in the vicinity for weeks thereafter. Still it was plain that the great majority of the host which I had seen had passed on.

While at Camden during the winters of 1903–4 and 1905–6, I witnessed nothing resembling this flight.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

Chuck-will's-widow and Mockingbird in Ontario.— CHUCK-WILL'S-WIDOW, *Antrostomus carolinensis.*— I took a male of this species on May

19, 1906, at Point Pelee, Essex County, Ontario. The bird was flushed from the ground and lit in a red cedar, giving an excellent chance to observe it, and I was fortunately able to take it. The bird was found about half a mile from the end of the Point on the west side. This is the first Canadian record.

MOCKINGBIRD. *Mimus polyglottos.*— I took a male on May 20, 1906, at Point Pelee, Essex County, Ontario. The bird was found near an old orchard on the west side about five miles from the end of the point.

In both birds the sexual organs were well developed.

Mr. B. H. Swales and Mr. P. A. Taverner were with me when both birds were shot.— JAMES H. FLEMING, *Toronto, Ontario.*

Wayne County, Michigan, Notes.— Secured a male Kentucky Warbler (*Oporornis formosa*) on May 6, 1906. The bird was in company with a pair of Ovenbirds in low swampy woods on P. C. 619, Gratiot Township. This is a rare bird in the State and the only county record. Visited a portion of Ecorse Township on May 9 and secured a male Blue-winged Warbler (*Helminthophila pinus*) on P. C. 49. This is the second record for the county, the first being a pair seen by me May 29, 1902. Also secured a male Orange-crowned Warbler (*Helminthophila celata*) in the same woods. This is the second county record and the first spring record. I also met with two female Wilson's Phalaropes (*Steganopus tricolor*) on P. C. 50 but failed to secure them. I have since spoken to Mr. P. A. Taverner in regard to them and learn that he observed one on the same grounds May 5. His was also a female and possibly one of the same birds seen by me. These constitute the only county records.— J. CLAIRE WOOD, *Detroit, Michigan.*

Notes from Connecticut.— The following specimens in my collection seem worthy of being recorded in 'The Auk,' as the races to which most of them belong are unreported from Connecticut. All were received in the flesh and almost all were shot by myself. Mr. Oberholser has kindly examined the representatives of western subspecies, except *Symphemia semipalmata inornata* and *Dendroica palmarum*, and agrees with my identification.

Symphemia semipalmata inornata.— Young female, Stony Creek, Aug. 15, 1897. Willets found at present on the Atlantic coast from Massachusetts south during the fall migration belong almost exclusively to this subspecies.

Accipiter velox. Of 20 female Sharp-shinned Hawks, chiefly young, which I have skinned since August, 1902, both ovaries were developed in 17. As a rule the left was the larger, but occasionally both were small and distinguishable from testes only by a magnifying glass. I suspect some unusually large 'males' in collections are in reality such females. I have also found both ovaries developed, though rarely, in *Accipiter cooperi*, *Buteo platypterus*, *Asio wilsonianus*, and *Cryptoglaux acadica*.

Otocoris alpestris hoyti. Four adult males,— Guilford, March 7, 1903; and West Haven, January 24, 1905.

Agelaius phœniceus fortis. North Haven, male adult, Dec. 25, 1901; male juvenile and female juvenile, Jan. 10, 1902; male juvenile, Nov. 11, 1903.

Helminthophila lawrencei. On May 31, 1905, while collecting with Mr. H. W. Beers and Mr. J. C. A. Meeker, I secured in East Haven, Conn., a male *H. lawrencei* having the full black chin. As it was undoubtedly a breeding bird we searched the vicinity carefully for the female and nest but without result, and absence from town prevented my looking for the young later that summer.

Believing some of the young might return to that neighborhood this year I revisited it on May 24, and collected another male within 300 yards of where the other was taken. This bird has the feathers of the chin yellow; the extreme upper throat black at base tipped with yellow; and the lower throat black, each barb of each feather being narrowly edged with yellow, these giving a brownish effect. In other respects it resembles the bird taken last year, except that the wing-bars are more yellow, and shows the plumage that might be expected if, as I believe, it was the young of that bird with a female *H. pinus.* Fourteen others of this genus examined within half a mile of this spot the same morning were all Blue-winged Warblers.

Dendroica palmarum. New Haven, male juvenile, Sept. 24 and Oct. 1, 1895; female juvenile, Sept. 19, 1903; Sept. 26 (2) and Oct. 5, 1905.

Seiurus noveboracensis notabilis. Hamden, Sept. 7, 1904, female juvenile; East Haven, Sept. 21, 1904, male juvenile; Orange, May 20, 1905, male adult.

Geothlypis trichas brachidactyla. A young male with the bill twisted into much the shape of that of a crossbill — the maxilla bending over the mandible to the right with a notch in the side worn by the latter — was collected in East Haven on Oct. 4, 1905. It was fat and otherwise in good condition, and was feeding in the top of a small tree about twelve feet from the ground like the tree-warblers.

Sitta carolinensis. Two young females with the crown black and almost as lustrous as in the male were taken in East Haven on Nov. 17, 1900, and Dec. 19, 1905.

Regulus calendula. A young male with the crown patch unusually small and orange-buff instead of scarlet-vermillion was collected in New Haven on Oct. 28, 1904. The entire plumage of this bird is unusually gray and the broken eye-ring, lores and forehead are distinctly white; but as it has the nasal tuft, slender, longer bill, and the measurements of *calendula* I do not think it is a hybrid with *satrapa.*

Hylocichla fuscescens salicicola. Four adult males,— New Haven, Sept. 23, 1895; Woodbridge, May 5, 1894; and East Haven, May 16, 1900, and May 14, 1904.— Louis B. Bishop, *New Haven, Conn.*

The Shedding of the Stomach Lining by Birds.— The stomach of a bird is lined by a corneous layer which, as is well known, strips very readily from the mucous coat after death. The fact that it sometimes separates naturally during the life of the bird is, however, less widely known.

In Newton's 'Dictionary of Birds,' p. 918, is summed up the knowledge of this occurrence in the case of Old World birds. It is said: "As a rule the cuticle....is continuously wearing away and being reproduced, but many cases are known in which most of the lining is suddenly cast off and ejected through the mouth, as has been observed in *Pastor roseus*, *Sturnus vulgaris*, *Turdus viscivorous*, *Carine noctua*, *Cuculus canorus*, and especially in *Buceros*." These cases are discussed in European publications but in American journals the phenomenon has received little attention.

A most interesting observation in the case of *Himantopus mexicanus* shows, that not only is the cuticular coat of the gizzard of birds worn down by constant trituration or disgorged *in toto*, as stated in the above quotation, but that it is also sometimes shed off in the gizzard and there ground up and disposed of in the same manner as food. The bird in question was collected at St. Joseph Island, Texas, Augsut 14, 1905. In examining its stomach contents, which was largely made up of aquatic hemiptera and coleoptera and grasshoppers, several bits of a translucent horny substance were separated for further study to determine their identity. Turning to them a brief examination convinced me that the material was a fragmentary stomach lining. This conclusion has subsequently been confirmed by most careful comparison with the present functioning lining of the same stomach, with which the fragments agree in every detail of structure. The present lining is hard and readily peels off, as is usual in birds.

Suggestive data are on hand in the case of a few other species, but in the above mentioned instance there seems to be no doubt that the stomach lining had been shed. Observations on this point are necessarily of a desultory nature and for that reason the case here noted is now put on record.— W. L. McAtee, *Washington, D. C.*

Virginia Creeper as a Winter Food for Birds. — Occasionally, we discover some favorite food supply which attracts nearly all the birds of the neighborhood. Such is furnished in some localities by the Virginia Creeper. On account of the climbing habit of this vine the berries escape being covered in winter and thus increase in importance to the birds with the severity of weather. Through all the cold, zero or below, through periods of sleet and snow and ice that sealed up everything on or near the ground, the writer has observed several species of birds feeding upon these berries.

The observations were made on the campus of the University of Indiana,

where several of the old buildings are thickly covered with the creeper. In the fall, winter, and early spring the vines are hung with innumerable clusters of berries and to them are attracted many of the winter resident birds. A year or more ago, at almost any hour, a glance through a window would reveal several birds, some of them perhaps within reach, clinging to the vines, feeding greedily. On one occasion, on opening a window, the writer surprised seven birds, representing six species, which were almost hidden in the vines encroaching upon the window opening. Of these a Flicker and a Cardinal whisked away but the others, including two Bluebirds, a Chickadee, a Tufted Titmouse and a White-breasted Nuthatch, trusted him and continued the feast. At times two or three Titmice could be seen twisting in and out among the berries, and brilliant Redheads often came. Indeed the number of charming new glimpses of birds made us almost wish there were Virginia creeper every where.

Bluebirds were the most constant visitors to the vines and a flock of them fed almost exclusively upon the berries. Each winter they frequented a tree midway between two great vine-covered walls and seemed never to leave the vicinity except for water. They were observed during one winter on practically every day from October 20 to February 20. Flickers relished the fruit almost as well. They liked to feed in vines upon which the sun was shining, and at one time five of these handsome birds were seen together on a thickly covered wall. On another occasion two Flickers, two Red-headed Woodpeckers and six Bluebirds feeding in the same place formed a pretty and most animated group.

An idea of the relative numbers in which birds of twelve species came to the berries may be obtained from a tabulation of several typical lists made on winter days in 1901, 1902 and 1903. Nine such lists have been selected and the totals for each species follow: Bluebirds, 43; Flickers, 21; Robins, 15; Tufted Titmice, 7; Juncos, 7; White-breasted Nuthatches, 4; Red-headed Woodpeckers, 3; Blue Jays, 3; Chickadees, 2; Cardinals, 2, and Chewink, 1.

The last named bird would not be expected to visit a busy college campus often, and in fact this was one of only two such occurrences noted in four years. The reason for the visit to the berries is plain: nearly all other food in the country was under a coat of ice. On the day we were honored by the Chewink, six other species, or seven in all, were seen in the vines, and two days previously nine were observed.

Such liberal patronage shows conclusively how birds value the Virginia creeper. The plant retains its fruit almost half the year and is therefore particularly valuable as an early spring bird food. To those who care to attract winter birds the Virginia creeper, both from its usefulness in this respect and on account of its decidedly ornamental appearance, is to be recommended most highly.— W. L. McAtee, *Washington, D. C.*

The Michigan Ornithological Club.— The annual meeting of the Michigan Ornithological Club was held in conjunction with the annual meeting

of the Section of Zoölogy of the Michigan Academy of Science in the Museum Lecture Room, Ann Arbor, on Friday, March 30, 1906. Chas. C. Adams, vice-president of the section of zoölogy, presided. The following ornithological papers were presented: 'Bird Dissemination of *Juniperus*,' Frank J. Phillips; 'An Ecological Study of the Birds of Ypsilanti Bayou,' Max M. Peet; 'Twenty-five years of Bird Migration at Ann Arbor,' Norman A. Wood; 'Notes on the Birds of the Michigan Forest Reserve,' E. H. Frothingham; 'The Bird Life of Ann Arbor, Michigan, and Vicinity' (by title), Norman A. Wood; 'A Topographical Study of the Birds of the "Overflow" at Ann Arbor, Mich.,' R. A. Brown; 'An Ecological Survey of Isle Royal, Lake Superior,' Chas. C. Adams; 'The Ecological Distribution of the Birds on Isle Royal,' Otto McCreary; 'The Fall Migration of Birds on Isle Royal' (by title), Max M. Peet. Professor Walter B. Barrows, president of the Club and of the Academy, gave his presidental address before the Academy on 'Facts and Fancies in Bird Migration' in the lecture room of the physical laboratory on Thursday evening.

A business meeting was held in the afternoon in the office of the curator of the University Museum. The officers for 1906–7 were elected as follows: President, Prof. Walter B. Barrows, Agricultural College; Vice-Presidents, J. Claire Wood, Detroit, Edward Arnold, Battle Creek, Norman A. Wood, Ann Arbor; Secretary, Dr. Alexander W. Blain, Jr., Detroit; Treasurer, Frederick C. Hubel, Detroit; Editor of 'Bulletin,' Walter B. Barrows; Associate Editors, Dr. Wm. H. Dunham, Kalkaska, Dr. R. A. Brown, Kalamazoo.— A. W. Blain, Jr., *Sec'y*.

RECENT LITERATURE.

Buturlin's 'The Breeding-grounds of the Rosy Gull.'[1]— The breeding-grounds of the Rosy Gull (*Rhodostethia rosea*) long eluded discovery, but Dr. Buturlin has now found one of its summer haunts in the delta of the Kolymá River, on the Arctic coast of eastern Siberia. Here (latitude 69° N., long. 160° E.) in June, 1905, he found small colonies of these birds breeding and secured a good series of skins of both adults and downy young, and 36 eggs. The first Rosy Gulls were seen May 30 and 31; "they had evidently just finished their migration and were tired after their exertions." In a few hours they had recovered from their fatigue. They were quite easy of approach, and Dr. Buturlin was able

[1] The Breeding-grounds of the Rosy Gull. By S. A. Buturlin. Ibis, 1906, pp. 131–139, 333–337.

to observe them and procure specimens whenever he wished. Later he "found the Rosy Gull nesting in little colonies of from two or three to ten or fifteen pairs, in company with the Black-capped Tern of the delta." From June 3 onward the gulls became scarce on the river, and were dispersed over the delta, "though the snow was still deep in the bushy portions and the ice had only melted for a distance of a fathom or two from the banks." On the 13th of June several clutches of eggs, all somewhat incubated, were taken. The last four clutches, taken June 26, "were so much incubated that the embryros were covered with down, and would have been hatched in a very few days."

"One of the colonies was on a piece of wet tundra near two lakes, a square kilometer in extent, covered with a labyrinth of pools of snow-water from two to six or even ten inches deep, but practicable in wading-boots, thanks to its floor of everlasting ice beneath the underlying mud. Between these pools, which were from fifteen to fifty feet in diameter, were pieces of very wet ground covered with *Carices*, damp mossy spots, and even tiny patches of comparatively dry bog covered with lichens or *Betula nana*. In this colony I found ten nests of *Rodostethia*, placed, among those of the Tern, on little mossy swamps almost bare of grass, evidently because the more grassy places were too wet and unsafe. But in the remaining colonies the state of affairs was otherwise; there the Tern nested on the moss — sometimes making no nest at all — and laid its one or two eggs much nearer to the dry parts of the little islands, which were perhaps a hundred yards long and from ten to twenty yards wide, while the Rosy Gulls made their nests on wet grassy spots or bogs much nearer to the water, and these nests rose from four to ten inches — generally from five to eight inches — above the surface. The hollow formed in the grass (dead grass of course, as green grass is hardly ever seen by the 20th of June) is about six or seven inches in diameter, but the nest proper is a hollow cup only about four or four and a half inches in diameter. It is composed of dry grass and *Carices*, sometimes with the addition of a few dry *Betula* or *Salix* leaves, while I once saw one made of white reindeer-moss." The number of eggs is nearly always three, but sometimes only two, while four are said to be often found. Downy young were taken July 6 and 7.

Dr. Buturlin gives a description of the eggs and of the downy young, and of the habits of the birds while at their breeding-grounds. In regard to their breeding range along this part of the Arctic coast, he states that "all the lowlands of the northern half of the Kolymá district (bordered by the rivers Chaun and Alazeya, the Arctic Ocean and the Stanovoi Mountains) are inhabited by *Rodostethia rosea*, and this area covers at least 160,000 square kilometers. In the eastern parts of the Verkhoyansk district it probably breeds up to the Indigirka River."

The account of this important discovery was written in the field, in two parts, dated respectively June 30 and July 10, 1905.— J. A. A.

Clarke's 'Birds of the South Orkney Islands.'[1]— The South Orkneys, situated about 600 miles southeast of the Falkland Islands, in about latitude 60° to 61° south, comprise a group of about a dozen small islands, discovered in 1821 and subsequently visited but three times prior to their exploration in 1903 by the Scottish National Antarctic Expedition, in the 'Scotia.' "So far as their Ornis is concerned," writes Mr. Clarke, "only two species of birds, and one of these problematical," had been previously alluded to. The 'Scotia' visited the islands in February, 1903, and at the end of March of the same year, after a successful voyage to the southern waters of Weddell Sea, went into winter quarters at Laurie Island, one of the only two large islands of the group. At the end of eight months she was freed from the ice on November 23, and immediately departed for the Falkland Island and Buenos Ayres to refit; but a party was left on the island, in charge of Mr. Mossman, the meteorologist, and Dr. Pirie, medical officer and geologist, to make collections throughout the summer months. To the labors of Dr. Pirie, says Mr. Clarke, "we owe most of our knowledge of bird-life of the island during this most interesting part of the year." Four species remained at the island throughout the winter, but by April all the others had departed, and the first spring movement began in October, when most of the species returned, the late comers arriving during the month of November. "During the summer bird-life was extremely abundant. Rookeries of the three species of Penguin (*Pygoscelis*) were numerous on the low rocky shores and less steep cliffs on various parts of the coast. Some of these bird-cities contained several millions of inhabitants, and their daily life presented scenes so remarkable as to be almost beyond description. The Ringed Penguin, hitherto regarded as being nowhere an abundant species, was found to have its metropolis at the South Orkneys, where the summer population on Laurie Is. alone was estimated at not less than one million birds."

The eggs of the Cape Petrel were here for the first time discovered, as were also the young of the Ringed Penguin and Snowy Petrel; the known range of other species was greatly extended. The collection of nearly 150 skins included previously unknown plumages, and representatives of 16 out of the 18 species known to occur at the islands; while the eggs obtained "numbered several thousands." Mr. Clarke is fortunate in having this rich material assigned to him for elaboration, and his report thereon shows that it has fallen into competent hands. Two colored plates illustrate young plumages of the Sheathbill, Snowy Petrel, and the Ringed Penguin; the eight halftones show the rookeries and nesting habits of penguins, petrels, and other species, among them Wilson's Petrel (*Oce-*

[1] Ornithological Results of the Scottish National Antarctic Expedition.— II. On the Birds of the South Orkney Islands. By Wm. Eagle Clarke, F. R. S. E., F. L. S., Royal Scottish Museum. Ibis, Jan. 1906, pp. 145–187, pll. iii–xiii.

anites oceanicus), which " resorts in thousands to Laurie Is. to nest on the cliffs of its remarkably extensive coast-line." This species is one of the last to reach the islands in spring (Nov. 11), and one of the earliest to leave (March 23).— J. A. A.

Menegaux and Hellmayr on the Passeres Tracheophones of the Paris Museum.— As indicated by the title, this important series of papers[1] is a critical revision of the American Tracheophones contained in the Paris Museum of Natural History, with special reference to species of supposed doubtful standing, and to the actual types of species contained in the French National Museum. The specimens of this group are said to number several thousands, and apparently represent about a third of the known species, including five here described as new. About 120 species are represented by types, and a number of others by cotypes. Here are preserved the types and other material resulting from the French voyages of exploration made in the early part of the last century, as those of d'Orbigny, Castelnau, Deville, A. St.-Hilaire, etc. Much of this historic material, the basis of our knowledge of many of the species of this group, has neither been studied anew nor carefully examined, according to these authors, by any recent investigators, with the result that doubt has sometimes been expressed as to the validity of some of the species. Some of the types had been lost sight of in the mass of specimens, being without scientific names, but it has been possible to rescue and identify them " with certainty " through various clues furnished by their labels. A few types appear to have quite disappeared, but among those here catalogued and commented upon are the types of 20 species described by Lafresnaye and d'Orbigny, of 9 described by Lafresnaye, of 13 described by Des Murs, of 12 described by Vieillot, of 11 described by Lesson, of 8 described by Pucheran, and of a smaller number described by various other authors.

Of special interest to American ornithologists is a statement in reference to the collection of Baron Lafresnaye, sold after his death to the Boston Society of Natural History. This is to the effect that E. Verreaux, a natural history dealer, before placing the collection on sale, labeled and catalogued the specimens, and indicated many as types which have no right to be so considered. Upon the authority of these indications American ornithologists have assumed, with apparently good reason, that the types of various species described by Lafresnaye and d'Orbigny in their preliminary papers on d'Orbigny's collection, published in the 'Magazin de Zoologie,' were really those so indicated in the Lafresnaye Collection.

[1] Etudes des espèces critiques et des types du groupe des Passereaux trachéophones de l'Amèrique tropicale appartenant aux Collections du Muséum. Par MM. A. Menegaux et C.-E. Hellmayr. I. Conopophagidés, II. Hylactidés, Bull. du Mus. d'histoire naturelle [de Paris], 1905, pp. 372–381. III. Dendrocolaptidés, Mém. de la Soc. d'hist. nat. d'Autun, XIX, 1906, pp. 43–126, (also separate, *repaged*). IV. Formicariidés, Bull. de la Soc. Philomat. de Paris, 1906, pp. 24–58.

But it is known, on the other hand, say these authors, that Lafresnaye received, for this collaboration, only duplicates, the true types remaining in the Paris Museum. "Consequently the specimens in the Paris Museum should be considered as the *true types* and those of Boston have no importance from the point of view of nomenclature, and above all not that which Americans seek to attribute to them."[1]

It is quite reasonable to suppose that where species were represented by a single specimen in the material collected on d'Orbigny's South American expedition, the specimens all remained in the National Museum, and that the types of new species should also be there preserved. But Lafresnaye's collection consisted of something more than duplicates from the Paris Museum, and he described many species without any association with d'Orbigny or his specimens, and it therefore seems a rather too sweeping condemnation to assume that the alleged presence of types in the Lafresnaye collection, in the Boston Society of Natural History, is nothing more than a "legend" that our hasty friends consider it a duty to the Paris Museum to reduce to nothing.

It is well to guard with jealousy the interests of one's own institution, but one also should not disparage lightly the good name of other institutions. It would be much more convincing and satisfactory if our authors had stated more explicitly the proofs that certain specimens in the Paris Museum are "les *vrais types*" — that is, how they were determined to be such, for presumably not many were thus indicated by the authors of the species they are alleged to represent. This is suggested in part by the statement in respect to how certain types, "perdus au milieu d'une masse de spécimens," were identified, and also by such cases as, for instance, *Nasica guttatoides* Lafr. (Rev. et Mag. zool., 1850, p. 387). Lafresnaye says: "Cette espèce a été rapportée de Loretta, au Musée, par l'expedition Castelnaud; mais nous la possédions déja dans notre collection, l'ayant achetée d'un marchand avec quelques oiseaux de Colombie." The original Lafresnaye specimen is still in the Lafresnaye collection in Boston, an adult bird in good condition, as cited by Elliot (Auk, VII, 1890, p. 186). Why then should the young female ("♀ jeune"), obtained on the Castelnaud Expedition, and only incidentally mentioned by Lafresnaye, be claimed as the type of *N. guttatoides* Lafr.? The figuring five years later of the young specimen in the 'Oiseaux' of Castelnau's 'Voyage' by Des Murs certainly could not make it the *true* type of this species.

[1] Donc les spécimens du Muséum de Paris doivent être considérés comme les *vrais types* et ceux de Boston ne peuvent avoir aucune importance au point de vue de la nomenclature, et surtout pas celle que les Américaines cherchent à leur attribuer.

Ce sont des animaux semblables, mais ce ne sont pas les types qui seuls font foi auprès des ornithologistes. C'est sur quoi nous serons plusieurs fois forcés d'insister dans notre travail, et nous espérons avoir ainsi réduit à néant une légende qui tendait à s'acclimater dans le monde scientifique au préjudice de la riche collection du Muséum de Paris.— *Menegaux et Hellmayr*, Bull. du Mus. d'hist. nat., 1905, No. 6, p. 374.

We would not for a moment question that where Lafresnaye's material is accredited in the original descriptions to the Paris Museum, or where he was joint author with d'Orbigny in publishing the species of d'Orbigny's Expedition, the true types are those now claimed as such in the Paris Museum. But sweepingly to denounce the alleged types in the Lafresnaye collection as spurious is quite another matter.

Besides, we believe it is not quite true that the Lafresnaye collection was catalogued and labeled by E. Verreaux before it was placed on sale, and that in this way many specimens were indicated as types that were not types. Our information is to the effect that Dr. Henry Bryant purchased the Lafresnaye collection after an examination of it while it was still at Falaise, and not from an inspection of a catalogue; and furthermore that the catalogue was made by Jules Verreaux and not by his brother Eduard, the former being an excellent ornithologist, capable of doing the work with proper discrimination through previous familiarity with its contents, while the latter was merely an intelligent dealer. We are further at liberty to state that for this information we are indebted to Dr. D. G. Elliot, who was in Paris at the time the collection was purchased, and in daily association with Dr. Bryant, and that they were in consultation respecting its value and character.— J. A. A.

Shelley's 'The Birds of Africa.'— Part I of Volume V [1] contains the families Oriolidæ, Sturnidæ, and Corvidæ (species 647–723). The European Golden Oriole (*Oriolus galbula*) is, singularly, the only migratory species of these families met with in Africa, the others being non-migratory. Fifty-seven species of Starlings are recorded, of which three are now extinct, and three are introduced species, two of which are from the Indo-Malay regions, and the other is the common Starling, imported from England into South Africa, and which has become firmly established in and about Cape Town.

The seven colored plates in this part illustrate eleven species, after drawings by Grönvold. It is a pleasure to note the rapid progress of this great work, the scope and character of which have been stated in notices of previous parts.— J. A. A.

Nash's 'Check-List of the Birds of Ontario.' [2] — The author states: "In the following Check List I have endeavoured to include all the birds which

[1] The | Birds of Africa, | comprising all the Species which occur | in the | Ethiopian Region. | By | G. E. Shelley, F. Z. S., F. R. G. S., &c. | (late Grenadier Guards), | author of "A Handbook to the Birds of Egypt," | "A Monograph of the Sun-birds," etc. | — | Vol. V. | Part I. | — | London: | Published for the Author by | R. H. Porter, 7 Princes Street, Cavendish Square, W. | 1906.— Roy. 8vo, pp. i–vi + 1–163, pll. col. xlxiii–xlix. Price 31s 6d net.

[2] Check List | of the | Vertebrates and Catalogue of | Specimens in the Biological Section | of the Provincial Museum | Birds | Department of Education | Toronto | [Seal] Toronto | Printed and Published by L. K. Cameron, Printer to the King's Most Excellent Majesty | 1905.— 8vo, pp. 82. Sub-title: Check List of the Birds of Ontario.

have been positively known to occur in the Province of Ontario. In cases where I have no personal knowledge of the record I have given the authority for it." The nomenclature and numeration are those of the A. O. U. Check List. The numeration is therefore not consecutive, nor is the whole number of species and subspecies stated. They number, by count, 324; with the House Sparrow, 325 — about 8 more than were given by McIlwraith in 1894. The species are concisely annotated with reference to their season of occurrence, relative abundance, breeding ranges, dates of migration, etc., while special stress is often laid upon their economic relations, as to whether beneficial or injurious and how. A paragraph is also given to the principal diagnostic characters of each of the orders and families, with an illustration representing some species of each family.— J. A. A.

'An Ecological Survey in Northern Michigan.'[1]—This Report gives the results of a natural history survey of the Porcupine Mountains and Isle Royal, in the Upper Peninsula of Michigan, made by a party from the University Museum, Michigan University, during the summer of 1904. The field party consisted of N. A. Wood (in charge), assisted by A. G. Ruthven, and Otto McCreary, N. F. Macduff, Max M. Peat, and W. A. Maclean, acting under the direction of Prof. C. C. Adams, curator of the University Museum. In an introductory note Prof. Adams describes the purposes and methods of the survey, and the results are embodied in a series of papers by the different members of the expedition. The ornithological parts of the Report are: 'The Ecological Distribution of the Birds in the Porcupine Mountains, Michigan' (pp. 56–67), by Otto McCreary, in which the physical characteristics of the 'stations' and 'substations' are described, with a separate enumeration of the birds found at each; and 'Annotated List of the Birds of the Porcupine Mountains and Isle Royal, Michigan' (pp. 113–127), by N. A. Wood, Max A. Peet, and O. McCreary. The observations in the Porcupine Mountains covered the period July 13 to August 13; number of species listed, 89. The Isle Royal observations were made from August 16 to September 5; number of species listed, 81. There are lists also of the plants, insects, mollusks, fish, amphibians, and mammals, the latter by Professor Adams, on the basis of the specimens and notes obtained by the different members of the expedition.

The work here undertaken is of an excellent character, and forms a good beginning, but nothing very conclusive can be expected from such a brief period of observation, and, as respects birds, conducted at a season of the year when they have for the most part concluded their home duties and are either given to wandering or are in actual migration.— J. A. A.

[1] An Ecological Survey | in | Northern Michigan. | — | Prepared under the direction of Chas. C. Adams. | — | A Report from the University Museum, University of Michigan, published by the | State Board of Geological Survey as part of the Report for 1905. | — | Lansing, Michigan Wyncoop Hallenbeck Crawford Co., State Printers. 1906 — 8vo, pp. 133, with 21 illustrations.

NOTES AND NEWS.

EMILE OUSTALET, a Corresponding Fellow of the American Ornithologists' Union, died on the 23d of October, 1905, at Saint Cast (Côtes du Nord), France, in the 61st year of his age. He was the most eminent of recent French ornithologists. He was born in Montbeliard, Department of Doubs, on the 24th of August, 1844. After completing his studies at the Lycéum he devoted himself to the study of natural history at the Ecole des Hautes-Etudes in Paris. His first scientific publications related to the organs of resperation in the larvæ of Neuroptera and to the fossil insects of France. In the year 1873 he succeeded Jules Verreaux at the Paris Museum of Natural History, and from this time on devoted himself exclusively to the study of ornithology. The rich collections received from the French missionaries in China, and from the French colonies in Indo-China and Africa especially engaged his attention, and eventually he became admittedly the highest authority on the birds of China. Upon the death of Alphonse Milne-Edwards, in 1900, he became his successor at the Muséum and was appointed to the chair of Mammalogy and Ornithology, which position he held till his death.

In June of last year he attended the International Ornithological Congress held in London, and few of the ornithologists who then had the pleasure of meeting the great French scholar could have anticipated, as said by Hellmayr, in his recent biographical notice of Oustelet (Ornithol. Monatsberichte, XIV, No. 1, April, 1906, pp. 57–59, to which we are indebted for many of the facts here presented), that "a few months later the earth would close over his mortal remains." Although his health was far from satisfactory, the news of his death came as a great surprise. The last days of his life were unspeakably painful and death was a release. He was interred in his native city on the 29th of October.

A list of Oustelet's scientific publications was issued by Jules Rousset in 1900, in a special brochure, wherein 143 titles were enumerated, by far the greater part being ornithological. Among his more important works may be mentioned the following: 'Les Oiseaux de la Chine' (with Père Armand David), published in 1877; 'Etude sur la faune ornithologique des îles Seychelles,' in 1877-1878; 'Monographie des Oiseaux de la famille des Megapodiidés,' in two parts, 1880, 1881; 'Etudes sur les Mammifères et les Oiseaux des îles Comores,' 1888; 'Mission scientifique du Cap Horn, 1882–1883, Oiseaux,' 1891; 'Catalogue des Oiseaux provenant du voyage de N. Bonvalot et du Prince Henrie d'Orleans, à travers le Turkestan, le Tibet et la Chine occidentale,' 1893–1894; 'Les Mammifères et les Oiseaux des îles Mariannes,' 1895–1896; 'Notice sur la faune ornithologique ancienne et moderne des îles Mascareignes et en particulier de l'île Maurice,' 1897; 'Les Oiseaux du Cambodge, du Laos, de l'Annam et du Tonkin,' 1899. In addition to these larger works were many important papers in various scientific journals.

Oustelet was president of the third International Ornithological Congress held in Paris in 1900; he was also a corresponding member of the British Ornithologists' Union, the American Ornithologists' Union, the London Zoölogical Society, and honorary member of many French and foreign natural history societies, and of course many species were named in his honor. It also fell to his lot to describe many remarkable forms of bird life.

VICTOR FATIO, a Corresponding Fellow of the American Ornithologists' Union, died at his home in Geneva, Switzerland, March 19, 1906, at the age of 67 years. A notice of his life and labors will appear in a later number of this journal.

GEORGE F. BRENINGER, an Associate of the American Ornithologists' Union, and widely known as a collector and taxidermist, died at his home in Phoenix, Arizona, December 3, 1905, of arsenical poisoning acquired in the preparation of specimens. Mr. Breninger had recently been in the employ of the Field Museum of Natural History, and for some years past was a frequent contributor to 'The Auk,' 'The Condor,' 'The Osprey,' and other ornithological publications. He had collected extensively in Arizona, Mexico, and California. A paper in 'The Auk' (XXI, 1904, pp. 218–223), giving an account of 'San Clemente Island and its Birds,' is based on his experiences there as a collector for the Field Columbian Museum.

LA RUE K. HOLMES, an Associate of the American Ornithologists' Union, died at his home in Summit, New Jersey, May 10, 1906, in the 24th year of his age. He was the only son of Colonel B. P. and Georgiana K. Holmes, and was born at Summit, December 28, 1883. As a boy he early developed a strong interest in natural history, and later became passionately fond of the study of birds. Besides his association with the American Ornithologists' Union, he was a Corresponding Member of the Delaware Valley Ornithological Club, and contributed to 'Cassinia' for 1904 a carefully prepared paper on 'The Short-billed Marsh Wren (*Cistothorus stellaris*) in Eastern Pennsylvania and New Jersey' (*l. c.*, pp. 17–25). For several months in 1905 he was employed in the American Museum of Natural History as an assistant in the department of ornithology. He was a careful field observer, and gave promise of much efficiency as an ornithologist. His death was due primarily to an attack of pneumonia.

MR. J. H. BATTY, for the last three and a half years a collector of natural history specimens, chiefly birds and mammals, for the American Museum of Natural History, was killed instantly by the accidental discharge of his gun while collecting near Pijijiapam, in the southern part of the State of Chiapas, Mexico, on May 26, 1906. Previously he had collected extensively in the province of Chiriqui, Panama, and in the Cauca region of

Colombia. These collections also now belong in great part to the American Museum, acquired partly by purchase and partly as a gift from Mr. Batty.

Mr. Batty was born about sixty years ago at Springfield, Mass., where he received a high school education and fitted for college, but out-of-door pursuits and a fondness for adventure led him to early abandon his college course. He had a great fondness for natural history, and in 1873 was a collector of birds and mammals in the mountains of Colorado for the Hayden Survey. For many years he was in business as a taxidermist in New York City, and published a book on 'Taxidermy and Home Decoration' which has had extensive sale. Later he engaged in plume hunting, in the early days of that unfortunate business, for this purpose visiting Florida, western Mexico, Central America, and northern South America, which continent he traversed from ocean to ocean. For the last eight years he was engaged in legitimate natural history collecting, and secured many new species in Colombia and Panama, before his formal engagement by the American Museum. He was an expert hunter, and unusually successful in capturing the larger Carnivores. He was a man of great physical endurance, courage, persistency, and enthusiasm, and was probably familiar with a larger portion of the wilds of tropical America than any other traveller or explorer. During the last three years he has collected extensively in the States of Durango, Sinaloa, Jalisco, and Chiapas, Mexico, he having sent over 3000 mammals and about 6000 birds to the New York Museum as the result of his labors. At the time of his death he was under contract with this institution to continue his work across Guatemala to the Pacific coast, and thence transfer his field of operations to the still very imperfectly explored regions of southwestern Colombia. His untimely death is thus a serious loss to the institution he has served so faithfully. Personally he was a man of the most kindly nature, trustful, and thoroughly conscientious in his work.

FRANK J. THOMPSON, formerly (1885–1896) an Associate of the American Ornithologists' Union, died in Culpepper, Va., his place of birth, May 29, at the age of 79 years. Mr. Thompson was a practical naturalist, and traveled extensively in the Old World tropics as a collector of living wild animals for zoölogical gardens. As stated in 'Forest and Stream' (of June 16, 1906): "Mr. Thompson was so well known as being better acquainted with wild animals than anyone else that he was appointed the first superintendent of the Zoölogical Garden of Philadelphia, having been summoned to take that place while traveling in Australia. Subsequently he became superintendent of the Zoölogical Gardens in Cincinnati and in Buffalo. Perhaps no other man ever had so great an experience with the wild game of the tropical world at large, and with his hunting experience was mingled a knowledge of the life-habits of these animals, which, if written out, would make the adventures of a multitude of famous book writers of these later days seem insignificant. Mr. Thompson had been a contributor to 'Forest

and Stream' for a period of more than thirty years. His writings covered a wide range of subject.... Personally Mr. Thompson was a man of gigantic frame and force, but of a nature so kindly and benevolent as to endear him to all with whom he was brought in contact."

It is a pleasure to learn that in the recent disaster to San Francisco and vicinity from earthquake and fire most of the large private collections of birds escaped practically unharmed, and that the natural history collections of Stanford University and the University of California suffered very little loss. The building of the California Academy of Sciences, however, was destroyed, with practically all its contents, except the types in the herbarium and a few others, saved through the thoughtfulness and courage of Miss Alice Eastwood, who entered the wrecked building and secured their removal before the fire reached it. The total destruction of this building with its rich contents is a great loss to science in general, and especially to Pacific Coast ornithology. "This collection," says 'The Condor' (May-June, 1906, p. 78), numbering in the neighborhood of 25,000 specimens, was unique in its extensive series of superbly prepared skins of sea-birds. The accumulation and study of these had long been the devoted aim of the Director of the Academy, Leverett M. Loomis. Another most deplorable feature of the disaster was the destruction of the valuable library, the ornithological portion of which contained many rare and expensive sets, such as complete files of 'The Ibis' and 'Journal für Ornithologie.... There is now practically no library on the Pacific Coast suitable for extended research reference in ornithology. However, the Academy's endowment remains, together with the insurance on the burned buildings, so that we may gradually look for the institution to gradually regain its scientific importance." Later information states that the rehabilitation of the Academy has already been entered upon with the promptness and energy that has characterized the people of the stricken city along every line of enterprise.

We learn from 'The Emu' (V, April, 1906, pp. 201, 202) that the 'cat question' is already a serious problem with bird protectionists in Australia. Mr. A. G. Campbell, one of the Hon. Editors of 'The Emu,' in writing of "the wild-cat pest — *i. e.*, the domestic cat gone wild," thus refers to the subject: "These injurious animals are now practically all over Australia. You find them on the shores prowling about sea-bird rookeries, and in the far interior thriving in rabbit-burrows. They are even to be found numerous upon the islands off the coast. After several generations in the bush-wilds these animals attain an immense size, and become so fierce that they have been known to attack human beings. Now, such great beasts need a quantity of food, and of what does that food chiefly consist? Why, of course, native birds and animals.

"How are we to combat this evil? 'It is a fine day; let us go out and kill something.' That is a Frenchman's view of the chief characteristic

of a Britisher. Well, if we must kill something, let us go out and kill cats. I do not mean our hearth-rug pets, but wild domestic cats in the bush. It would be keen sport hunting cats with rifle and dogs — if not too rough on dogs, judging by the size and spitefulness of some of the 'Toms' I have encountered. As is done in the case of foxes and wild dogs, let rewards be paid for cat-scalps.

"This suggests the ways and means — the only reasonable course begin that of a cat-tax. A collection of, say, one shilling per annum from owners of tame domestic cats would yield a sufficient fund to combat and keep in check the wild-cat nuisance in the country, and thus give our beloved birds a chance for existence.

"These few hasty thoughts are offered in order to create discussion on a subject which has been uppermost in my mind for some years regarding bird protection. Undoubtedly, if many of our highly interesting and beautiful birds, especially ground-loving species, are to be preserved from total extinction, we must, as a bird-lover's union, at no distant date face squarely a wild-cat destruction scheme."

In this country the licensing of cats, or a cat tax, with responsibility on the part of the owners of cats for their acts, and also for their welfare, has already become a public question, in respect to which decisive action cannot be taken too quickly. The extent of the destruction of young birds by even the pet cats of the household in country and suburban districts is appalling. A friend of both birds and cats has informed us of his method of lessening the evil; viz., to keep a close watch for the young birds as they leave their nests in his grounds, and gather up the helpless fledglings and place them in deep baskets and suspend the baskets from the lower branches of trees, where, inaccessible to cats, the old birds will continue to care for them, and when the young birds are strong enough to get out of the basket they are fairly well prepared to keep out of the reach of cats.

A NEW bird book, 'The Birds of Washington,' by William Leon Dawson, assisted by J. H. Bowles, is announced by the Occidental Publishing Company of Seattle, Wash., to appear December 1, 1907. The work will be in two volumes, and issued in several editions, varying in price according to the binding. It is announced to be "a complete, popular and scientific treatise on the birds of the State of Washington," and to contain "concise and accurate descriptions of plumages, nesting, range, etc., based so far as possible upon an original study of Washington material."

A WORK on the 'Nesting Ways of North American Birds' is in preparation by the Rev. P. B. Peabody, of Newcastle, Wyoming. From a letter by the compiler to 'The Condor' (May–June, 1906, pp. 78, 79), we quote as follows: "The scope of the work is the whole field of nesting habits, save for considerations of shapes, colors, sizes and textures of eggs; this portion of the field being already fairly well covered. Everything available in

print has now been drawn upon except the great files of bulletins and proceedings which are to be found only in the larger city libraries; and not, by any means, in even all of these. The work now being done is in this direction, and it is a work both laborious and costly.

"In the preparation of large masses of material, never as yet adequately found in print, the Preparator of the proposed book has enjoyed the generous help of just forty bird students and field workers. Of these, twenty-five are men of national reputation in this domain. When this work is ready for the press, the student who shall look to it for information concerning times, places, number of eggs, nesting conditions and distinctive habits of birds during the nesting season may confidently look to find, in 'Nesting Ways,' the vital facts, so far as known, for all North American birds. Here, in reasonably brief space, he will readily find through careful lists and indexes that which would cost him no less than two hundred dollars, if bought in original form, and which would involve, even then, literally months of perplexing and wearisome research. The illustrations will be full, and wholly original. A large number of the subjects portrayed have never before been photographed; and there will be found in this work not a few facts that are absolutely new to science.

"The book in question, incubating in the Preparator's mind for many years, has not been undertaken with any thought of personal gain. Prepared, throughout, with a view to the needs of the great host of younger bird students, the convenience of the scientific student has been as carefully borne in mind. And every possible effort will be made to keep the price of the work within the scope of humble purses."

In this connection the author makes an appeal for full and authentic data concerning the nesting of some thirty to forty species of birds, mostly West Coast forms, a list of which he presents, and states that credit will be given for any aid rendered.

SOME years since, Otmar Reiser, curator of the Bosnia-Herzegowina Laudesmuseum in Sarajevo, began the publication of his 'Materialien zu einer Ornis Balcanica,' of which Volume II, 'Bulgarien und Ost-Rumlien,' appeared in 1894, and Volume IV, 'Montenegro,' in 1896. After a lapse of ten years, Volume III, 'Griechenland und die griechischen Inseln (mit Ausnahme von Kreta),' is announced to appear in 1906, and Volume V, 'Serbie,' in 1907, to be followed soon after by Volume I, 'Bosnia-Herzegowina,' completing the work, which is published by Adolf Holzhausen, Vienna. Each volume in large octavo, illustrated with both colored and plain plates and a map of the region treated.

Parrot, C., and W. Leisewitz. Untersuchungen zur Nahrungsmittellehre der Vögel. (Verhandl. Orn. Gesells. in Bayern, V, 1904, pp. 436–443.)

Ribeiro, Alipio de Miranda. Vertebrados do Itatiaya. (Archivos do Mus. Nac. do Rio de Janeiro, XIII, 1906, pp. 1–28, pll. i–iii — aves, pp. 17–25.)

Shelley, G. E. The Birds of South Africa. Vol. V, part 1. R. H. Porter, London. Price 31s. 6d. net.

Shufeldt, R. W. Bird Photography in Norway. (Pop. Sci. Month., May, 1906.)

Van Dart, E. D. On a New Bird of Paradise. (Notes from Leyden Mus., XXVIII, 1906.)

American Ornithology, VI, April–June, 1906.

Annals of Scottish Nat. Hist., April, 1906.

Avicultural Magazine, April–June, 1906.

Bird-Lore, VIII, Nos. 2, 3, March–June, 1906.

Birds and Nature, XIX, April–June, 1906.

Bulletin British Orn. Club, Nos. CXXIII–CXXV, 1906

Condor, The, VIII, No. 3, 1906.

Emu, The, V, Part 4, April, 1906.

Forest and Stream, LXVI, Nos. 14–26, 1906.

Monthly Bulletin Pennsylvania Dept. Agric., Zoölogy, III, Nos. 10–12, IV, No. 1, Feb.–May, 1906.

Naturalist, The, a Monthly Journ. Nat. Hist. for North of England, Nos. 584–591, Sept., 1905, to April, 1906.

Ornithologisches Jahrbuch, XVII, Heft 2, 1906.

Ornithologische Monatsberichte, XIV, Hefte 4–6, April–June, 1906.

Ornithologische Monatsschrift, XXXII, Nos. 3–5, 1906.

Ottawa Naturalist, XX, Nos. 1–3, 1906.

Our Animal Friends, Vol. XXXIII, No. 8, April, 1906.

Philippine Journal of Science, I, Nos. 2 and 3, and Suppl. I, 1906.

Proceedings Acad. Nat. Sci. Philadelphia, Vol. LVII, Part 3, and Ann. Reports, 1905.

Science, N. S., Nos. 587–599, 1906.

Warbler, The, II, No. 2, 1906.

Wilson Bulletin, XIII, No. 1, March, 1906.

Zoölogist, The, 4th Ser., X, Nos. 111–113, 1906.

PUBLICATIONS RECEIVED.

Adams, Chas. C. (Director). An Ecological Survey in Northern Michigan. (From Report of Board of Geol. Surv. of State of Michigan for 1905, pp. 1–133, 21 illustr.)

Burroughs, John. Bird and Bough. Houghton, Mifflin and Co. 1906. $1 net.

Buturlin, S. A. (1) Euber neue Formen der echten Stare. (Orn. Jahrb., XV, 1904, pp. 205–213.) (2) Breeding Grounds of the Rosy Gull. (Ibis, 1906, pp. 131–139, 333–337.) (3) On the Geographical Distribution of the True Pheasants. (*Ibid.*, 1904, pp. 377–414.)

Dresser, H. E. On Some Palæarctic Birds' Eggs from Tibet. (Ibis, April, 1906, pp. 337–347.)

Eifrig, C. W. G. The Migration of Birds. (Ottawa Nat., 1906, pp. 33–40.)

Emerson, W. Otto. (1) A Manuscript of Charles Lucian Bonaparte. (Condor, VII, March, 1906,— separate, without pagination.) (2) *Oceanodroma leucorhoa* and its Relatives on the Pacific Coast. (*Ibid.*, pp. 53–55.)

Finsch, Otto. Zur Erforschungsgeschichte der Ornis Javas. (Journ. f. Orn., 1906, pp. 301–321.)

Jourdain, Francis C. R. The Eggs of European Birds. Part I, pp. i–iv + 1–80, pll. col. 1–14. Price 10s. 6d.

McGregor, Richard C., and Dean C. Worcester. A Hand-List of the Birds of the Philippine Islands. No. 36, Publications of the Bureau of Government Laboratories. Large 8vo, pp. 123.

Menegaux, A., et C. E. Hellmayr. Études des espèces critiques et des types du groupe des Passereaux trachéophones de l'Amérique tropicale appartenant aux collections du Muséum. I. Conopophagides, II. Hylactides. (Bull. Mus. d'hist. nat., 1905, No. 6, pp. 372–381.) III. Dendrocolaptidés. (Mém. Soc. d'hist. nat. d'Autun, XIX, 1906, pp. 43–126 — also separate, repaged.) IV. Formicariidés. Bull. Soc. Philom. de Paris, 1906, pp. 24–86.)

Merriam, C. Hart. Is Mutation a Factor in the Evolution of the Higher Vertebrates? (Proc. Amer. Ass. Adv. Science, LV, 1906 — repaged separate, pp. 1–26.)

Miller, Waldron DeWitt. List of Birds collected in Northwestern Durango, Mexico, by J. H. Batty, during 1903. (Bull. Amer. Mus. Nat. Hist., XXII, pp. 161–183, June 2, 1906.)

Nash, C. W. Check-List of the Birds of Ontario. 8vo, pp. 82. Depart. of Education, Toronto.

Neumayer, G. von. Sammelu und Beobachten von Vögeln. (Anleitung zie wissench. Beobactungen auf Reisen. 3d Aufl., 1906, pp. 527–560.)

Parrot, C. (1) Beobachtungen auf Norderney und Borkum. (Verhanal. Orn. Gesells. in Bayern, V, 1904, pp. 8–13.) (2) [Kreuzungsprodukt zwischen Spielhuhn und Fasan.] (*Ibid.*, pp. 14–16.) (3) Ueber die Ornis von Süd-Tirol. (*Ibid.*, pp. 28–32.) (4) Zur Systematik der palaärktischen Corviden. I. (Zool. Jahrb., 1906, pp. 257–294.) (5) Vogelzugsbeobachtungen auf Reisen. (Globus, März, 1906, pp. 123–126.)

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SOME UNPUBLISHED LETTERS OF ALEXANDER WILSON AND JOHN ABBOT.

BY WITMER STONE.

LETTERS of those in whose footsteps we are following and whose interests are our interests are always entertaining. Especially is this the case when it is supposed that all the existing letters of a writer have been collected and published. This being true of Alexander Wilson, my pleasure can readily be imagined when I recently came across three unpublished letters bearing his signature, stored away in the fireproof of the library of the Academy of Natural Sciences of Philadelphia. With them was one from John Abbot of Georgia, a correspondent of Wilson, well known as a collector and portrayer of insects.[1] Through the courtesy of Dr. Edward J. Nolan, Librarian of the Academy, I am able to present these four letters to the readers of 'The Auk.'

The first letter was written by Wilson while he was living in Philadelphia engaged in editing the 'American Cyclopædia', and addressed to Bartram at his home, across the Schuylkill, now Bartram's Garden in West Philadelphia.

[1] Abbot was born in England about 1760 and at an early age was sent to America by several prominent entomologists. He remained in Georgia and was still alive in 1840 (according to Swainson). Many of his paintings and notes were published as Smith and Abbot's Lepidopterous Insects of Georgia, 1797.

Number two is to his publishers, Mess. Bradford and Inskeep, written while he was canvassing for the Cyclopædia and the Ornithology, and incidentally contains some remarks of historic interest. Number three is to Abbot and contains more ornithology than probably any letter of Wilson that is extant.

Number four is from Abbot to Ord when the latter was engaged in completing Wilson's unfinished work.

I. WILSON TO BARTRAM.

Philad[a] May 22[d], 1807

Dear Sir

With this you will receive V. 4 part 1st. of the Am. Cyclopaedia. It would have been sent a week ago but for want of an opportunity.

By the impressions of my two first plates that accompany this you will see that I have a request to make to Miss Bartram if the state of her health will permit. We want well coloured specimens of the plates to be sent to Boston, Charleston, New York &c. and as my time will not permit me to do them myself I have presumed to apply to her to colour the impressions that are sent with this, according to the specimens that accompany them, for which I shall make any return. Perhaps Mary Leech might be set to some parts of them with safety which would lessen the drudgery.

If this request should be considered as disagreeable you will not I am sure impute it to any motives but those of the highest esteem for those to whom I make it, and the impressions may be returned tomorrow by any safe conveyance with perfect good nature on both sides.

In washing the blue Jay the most difficult part of the process is to lay on the colour without being streaked (which you will see I have not succeeded in) and in giving the true tint which I think is nearly approached in the specimen. Nothing but a wash is necessary as the engraving must be seen thro the colour.

But you know the whole affair ten times better than I can pretend to and as I shall be engaged in Drawing on Sunday I beg you would drop me a line tomorrow by Mr. Leech.

With sincere and affectionate wishes for your happiness and that of the family

I remain as ever

Dear Sir

Your much obliged friend

Alex. Wilson.

Mr. Bartram

P. S. The yellow bird has been coloured with a too dull yellow and the *breast* of the hanging bird may be more of a vermilion.

II. WILSON TO MESSRS. BRADFORD & INSKEEP.

New York, Oct. 2d, 1807.

Dear Sir

I have visited the whole Booksellers of New York distributed your letters and exhibited the specimens of the Ornithology, called on a number of gentlemen to whom I had been recommended and having done everything here for both works that I have been able I shall leave New York tomorrow and pass slowly through N. Jersey so as to be home some time early next week

Messrs. Brisbane and Brannan declined engaging for any number of copies of the Ornithology but reserved their offers until the first number should be published. The specimens attracted general admiration and few or no subscribers. When I called on Dr. Miller there were two other gentlemen of the faculty with him who desired me to put down one subscription for the College and two or three other gentlemen have subscribed. I have called on Dr. Mitchell three different times but have not yet seen him, Dr. Miller however with whom I breakfasted yesterday has promised to make respectful mention of the Ornithology in the Medical Journal. As soon as the steam boat returned from Albany I called on Mr. Fulton and mentioned some particulars in the article Canal which I was anxious he should see before its publication, gave him your address and presented him with a specimen of the Ornithology letter press &c. with which he was much pleased and will call on you sometime next week to examine what they have said of himself under "Canal" etc and if not too late to add what observations may seem necessary. This steam boat which

threatens to deprive all the other passage boats and stages of business arrived yesterday forenoon after a passage of 160 miles in 27 hours carrying upwards of 60 passengers at 7 dollars each besides their goods and set off this forenoon at ten o'clock with a heavy sea and strong gale approaching to a storm right in the teeth as we usually say. The wharves and vessels were crowded with spectators many of them dubious of her meeting such a sea but as soon as the machinery was put in motion she shot through the water as steady and level as a line midst the shouts of the multitude

I am with sincere esteem

Dear Sir

Yours

Alex. Wilson.

III. WILSON TO ABBOT.

Philad[a] Jany. 23[d] 1812

Dear Sir

I this day rec'd a small box containing a roll of Drawings 3 in number which I myself delivered to Dr. Barton also a *small* package directed to Wm. Bartram which has also been sent to him, and 4 Birds viz. the small Crow, female solitary Flycatcher, and the male and female Ground dove all in good order. The Crow and the Flycatcher I had already figured. The other two were very welcome; you will please to draw on me thro Mr. Oemler for the amount of these 4 & any other you may send, at the rate I mentioned, & I hereby empower him to pay you accordingly. Please to send the Chuck wills widow (male) and egg, and the beautiful rare Sparrow you mention, also the striped Wren. I do not know the large green-billed Woodpecker, nor any woodpecker as large as the Woodcock, if you know of such be so good as to send me one. The Slate-coloured ricebird is a species of Grosbeak, about the size of the rice-bird, and the black-headed green warbler is common in the Bahamas and sometimes comes to Georgia. It is not the Hooded Warbler. The Crossbill you mention is I suppose the female of the common one. It is green olive. When I was in Mississippi Territory two years ago I shot the small yellow Warbler with rust coloured spots on the back.

My 5th Volume is nearly ready for publication and I have nearly got through all the Land birds. Any remarkably rare Hawks or Owls will be very welcome particularly the Swallow-tailed. Be so good as to mention the colour of the bill, eyes and legs and any other fugitive parts. I shall also be glad of any anecdote relative to their manners, nest, eggs &c.

I will send you a list of *all* the Land & Water Birds which I have yet to draw, marking those with a *star* that I think you can furnish me with. In the mean time send me the by first opportunity what you can in a strong box directed to A. Wilson, care of Bradford & Inskeep, Booksellers, Philada. Let me know if there be anything here which I can do for you and I will do it with pleasure. Can you inform me of the nest or eggs &c of the Ground Dove. I wish you could procure me any particulars of this beautiful little Dove. I presume they are migratory. I hope you will soon get quit of that distressing complaint the *Rheumatism.*

How is my friend Dr. Baldwin & what has become of him. As I will send Mr. Oemler the Volumes 3, 4 & 5 in a few weeks (5 or 6) you will be able to see the Birds I have already described.

I hope you will embrace the *first opportunity* of sending me another package, and write me at the same time by post mentioning the name of the Vessel. Compliments to Mr. Oemler and my best wishes for your health and happiness

With great esteem

Your sincere well wisher

Alex. Wilson

Mr. Abbot

IV. ABBOT TO ORD.

Mr. George Ord
Naturalist
Philadelphia

Scriven County Georgia Mar. 1814

Sir:

I received your Letter last week of Dec^{r} last and from the great esteem and respect to the memory of your friend Mr. Wilson, who' I was acquainted with during his visit to Georgia, I will give you what little information I am able respecting the birds you mention.

The Islands & lower Country of the Southern parts of Georgia is the great rendezoous of the Water birds but owing to the unhappy times chiefly and other circumstances I have never yet had the pleasure of visiting it. At the commencement of the War I had undertaken to make a collection of stuffed Birds & as a complete collection of Drawings of them in colors as I was able for a Gentleman in England but last fall in despair of seeing peace restored, I retired into the Country after having made about 220 Drawings throwed away a large collection of stuffed skins, have entirely laid it aside, & entered into another line of employment, where I am in hopes the mad and destructive Ambition of the rulers of the world can but little interfere.

The Carrion crow builds its nest in the large Trees of the thick swamps over the lakes and the low wet swamps, I have never seen the eggs but don't doubt they are in building the nest similar to the other kind, they retire every evening to the swamps to roost. They frequent the Butcher pens, Commons & the upper part of the Town where the People live who butcher hogs in great numbers & walk about the Streets like Domestic fowls. It is diverting to see when they throw out any entrails & offal of the hogs to see with what greediness they seize & scramble for it often one swallowing one end & another the other & pulling against each other till the strongest prevails, they often steal fresh meat when put out on a shed or other place to dry in the Sun and when a horse or dead cow is dragged out upon the commons they soon light upon it in great numbers, the dogs interrupt them but are serviceable to them in breaking the Animal up for them as I dont believe they themselves can get thro the skin as they begin at the eyes and vent. The Turkey Buzzard is accused of killing young Lambs & pigs by picking out their eyes, but I believe this sort does not. I have not observed a single T. Buzzard in Company with them, but a few of the latter frequent some of the outskirts of the Town & are also very gentle. It is only these that frequent the town & common that are so domestic for if you meet with any of either kind 2 or 3 miles from town, they are wild as the rest in the Country but neither species is by any means a shy bird in Georgia. Having killed one of the V. aura in the country as it became putrid the scent attracted several of the V. atratus to settle on the trees

round it, but they did not attempt to eat it. This latter species is not so plentiful in the country as about Savannah. Upon killing a beeve in the Country, the scent of the blood immediately attracts them and you will soon see them flying in the air gathering from different quarters to feed on the offal as soon as it is left. This is the case with both species.

The Raven only frequents the back inland Countries of Georgia & can inform you nothing more of it.

Both the Darters I esteem but of one species. I have only now by me a drawing of the male or black bellied but have had them both at one time, in the female I remember that the upper parts was similar to the male only the color and markings more pale and obscure, length 36 inches, 46 in extent, tips of both mandibles serrated pointing inwards. Frequent the ponds, rivers & creeks in the Summer, builds in Trees in Swamps & Islands in ponds &c. makes their nests of Sticks, often builds in the same tree annually Egg sky blue, a nest that was not very large had 2 eggs in it & 6 young ones of different sizes. Commonly sets on a stump in the water of mornings in the spring with its wings extended to the sun from which it is called by some people Sun Bird: difficult to be shot when swimming keeping its head only just above water.

The Purple Gallinule frequents the Rice fields & marshes in the lower parts, is rare, having only met with but 3 specimens, have no doubt but it breeds here is 12 inches in length. When alive, the naked crown or spot above the bill is bright blue, bill red lead, tip yellow ochree. Sides yellow brown. You dont mention the Cinirious Gallinule, about the same size & rarity, the spot or the crown as well as the upper part of the bill & garters red tip of the bill yellow. Is of the color much as the last the toes is larger in proportion than that of the former.

Coot (L 14½ extent 25½) frequents the Rice fields and ponds &c. in Winter, I dont know that it breeds here, if it does it is in y^{e} s^{n} parts the female is the palest in color, the spot on y^{e} forehead is a bright chestnut brown. I have been told there is 3 species of Coots in Georgia. I have had several at a time that was asserted to be of 2 species but upon a careful examination cou'd observe no difference (but in size) but what might arise from age or sex.

I can inform you nothing in respect to the C. glacialis. I had

a Loon once brought me alive of a plain color like a goose it was 30 Is. in length ext. 53 bill 3¼ long very sharp, roof of the mouth serrated. When found by the person in a path after a high wind it made immediately at him and struck him in his leg to the bone, its note or cry very loud and hollow.

The Soree certainly breeds here, there is numbers of the young ones in the Rice fields in the Summer, they differ materially from the Adults, I thought from the neatness of their marks & brightness of color (not usual in young birds) that they were a distinct species, 'till killing one late in Autumn more advanced in plumage convinced me of my mistake but no bird differs more in its growth than the large streaked Heron. I should have never believed them to be the same had I not killed them in the middle stages of plumage.

I will with pleasure give you any information you desire of any other birds or of several species of land Birds I am acquainted with if you desire it that I have not yet seen described in Mr. Wilson's work. Are you acquainted with the female yet of the Louisiana Kite. I have not yet procured one but observed sev^{l} flying last spring in Company with the males. I tried in vain to shoot one but could sev^{l} times have killed the males the tail appeared to be barred with brown. And remain Sir, with respect

Your obedient humble servant

John Abbot

George Ord Esq.
Philadelphia

ORNITHOLOGICAL NOTES FROM WESTERN MEXICO AND THE TRES MARIAS AND ISABELLA ISLANDS.

BY H. H. BAILEY.

HAVING heard from my friend, the late Walter E. Bryant, of a number of business propositions in his section (Western Mexico) I decided to take a trip down and look them over and also do a little collecting. After a hasty gathering together of things for the trip I sailed for San Blas, Mexico, February 11, 1905, on the Pacific Mail Steamer 'City of Sydney,' and arrived at Mazatlan February 17. Mazatlan and the Tres Marias Islands were of particular interest to me from an ornithological standpoint. It was here that the well known ornithologist, the late Col. A. J. Grayson, collected, and later published the first information regarding the ornithology of the Tres Marias Islands and Isabella Island, all of which I hoped to visit before returning to the States.

The rocks forming part of the harbor entrance of Mazatlan, with a number of others lying to the north of it, were covered with Heermann's and Western Gulls and California Brown Pelicans, while numbers of boobies, which I afterwards found to be the Blue-footed Booby, were fishing in a little channel forming a slight break in the north side of the harbor proper. A full day was spent here while the steamer took on and discharged cargo, and from an old darky boatman that spoke English, I learned that it was easier to get to Isabella Island from San Blas than from Mazatlan. Isabella Island was passed on the way down to San Blas, which was reached the next day, February 19. The steamer anchored about two miles off shore, which was reached by a small twenty-foot boat run by the natives. From a native who spoke a little English, I learned that the Plateno Rancho and Don Walterio, as they called Mr. Bryant, were ten miles away, across a small bay, reached in a ten-foot dugout or canoe. So, after some trouble in finding a man to take me over, I bundled my luggage into a canoe and set sail. On arrival at the ranch landing, some two hours later, I found one of the fiercest looking crowds lined up to greet

me I think I ever saw, machetes and knives being everywhere in evidence, so much so that I came near giving up, right then and there, all thoughts of business and ornithology. However, as I was not slaughtered on the spot, I took courage, and after repeated inquiries as to Don Walterio, managed to make myself understood, and with three mosos stringing behind with my luggage, set forth for the ranch house, three quarters of a mile distant, through the banana plantation of which Mr. Bryant was superintendent. The dogs soon announced my approach, and as I reached the shelter of the porch he came out to greet me. Which of the two was the more glad to see the other will never be answered. The rest of the afternoon and evening were spent in telling the latest news from civilized parts, and in getting in return points regarding the birds, the lay of the land, and the business I had come down to transact.

San Blas is a small coast port in the Territory of Tepic, with about three thousand inhabitants, in latitude 20°–21° and longitude 105°–106°. The town, which consists of a few stores, government buildings and a number of brick and wooden houses of the better class, besides the regular palapi houses of the natives, is situated close to the beach at the mouth of the estero which forms all the harbor the place affords, and is available for only the smaller craft. The surrounding country is level for a few miles and has been cultivated to some extent, but most of the crops come from the Santiago district, some twenty miles away on the banks of the river of that name. About five miles northeast of the town the mountains begin, running parallel to the coast line and swinging to the south on the other side of the bay, directly back of the banana ranch. Here are two of the highest peaks in the whole range; they are the compass of the San Blas sailor, as will be shown later on in my story. The estero forming the harbor for San Blas is one of the three mouths of the Santiago River, and runs northward parallel to the coast line for about fifteen miles until it meets the main channel of the river. This river and its banks, which at low tide are hard black sand, offer many opportunities to the ornithologist in the way of water birds, while the natives gather from the bushes, partly covered by water at high tide, a small oyster, relished by native and tourist alike, and which forms one of the staple articles of food for that section and is also shipped inland.

A number of small groves of cocoanut palms give shade to the town and supply nesting places for parrots, woodpeckers, crows, blackbirds, and orioles, and a roosting place for the ever present vultures which, with the aid of the chickens and hogs, take the place of a sanitary department. The land that is or has been cultivated in years past has on it a few scattered trees which afford nesting sites for some of the commoner birds, while the bushes and undergrowth bordering the roads are literally alive with quail, doves, parrots, parakeets, Groove-billed Anis, trogons, and numerous small birds, which from sunrise till about 7.30 A. M. make one think all the birds in the whole Territory are congregated there. With the two mouths of the Santiago River, one at the front of the town, the other to the south of it, and the good shore line of sandy beach, one can get all he desires in the way of water birds; and, taking it all in all, this particular section is certainly an ideal place for collecting. But with all these inducements, don't think for an instant that all you have to do is to walk out and load up with land and water birds without any trouble. Along the beaches the mosquitoes and a very small species of sand fly make you long to get back to the net shelter in your room, while the same little plagues attend collecting in the fields, with the addition of the black ant, which stings with its tail, and the "weaners," a very small species of tick — so small as to be hardly distinguishable except when in bunches of thousands on your clothes. These weaners are on every blade of grass and bush, and one has to change his clothes immediately in coming in from the field, smoking them thoroughly being about the only way to get them off. About all the collecting must be done from day-break to 7 or 8 o'clock, on account of the heat, and after about 8 o'clock all the birds have retired to the undergrowth for the day, from which it is almost impossible to dislodge them or to get one should you shoot it. The rainy and hot season is said to last from about June 15 until the 1st to the 15th of November, during which period this section is visited by destructive thunderstorms or chubascos.

From February 18 until March 11 a little collecting was done on and around the banana ranch, with a few days at San Blas, and during this period the majority of the commoner birds were secured. An estero at the foot of the mountains and back of

the ranch house engaged my attention for a number of mornings. The trees and palms overlapped, forming a complete canopy for the streams, and it was down this shady way that the birds were wont to pass daily in their search for food, at about 8 A. M. Although it seemed as though thousands passed me, I was never able to find out where they went on reaching the mouth of the estero.

While in San Blas, on March 1, I was fortunate in meeting Mr. Geo. Beermaker, manager for the Union Fertilizer Company of Los Angeles, Cal., and as he was sailing for the Tres Marias Islands that night, I engaged passage and board on the island for the trip. When we left, at 10.30 P. M., the wind was fair and light, as it always is at night at that time of year, and after a good night's sleep, rolled up in a blanket on top of the cabin trunk, we arose to find the islands still many miles away. That day and most of that next night we were rolling on the long easy swells without a breath of air to fill our sails, and bird life seemed also to have vanished with the wind. A few Heermann's and Western Gulls came near the boat, and a few pairs of Man-o'-War Birds and Red-billed Tropic Birds were sailing gracefully high in the air. After beating back and forth in the light wind that sprung up toward daybreak, we arrived off White Rock about 5.30 A. M. and cast anchor. Some fifteen men and two women were already settled in palapi houses on the small stretch of sandy beach at the foot of the highest cliff, and the white tents of the 'boss' looked very inviting at that hour of the morning. We landed in a small canoe, reaching the beach without getting much wet, and the little twenty-ton schooner 'Concha Sofia' set sail for San Blas, to return for us in about ten days, with supplies, mail, etc., from the mainland. White Rock lies almost directly between Magdalena and Cleofa Islands separated from the latter by a narrow rough channel of about half a mile in width, and about ten miles from the former, in longitude 106°–107°, latitude 21°–21½°. As one would infer from its name, this island is solid rock, the highest point of which is about 200 feet above sea level, and the top for the most part is a nearly level plateau. The walls rise almost perpendicularly from the sea, and outside of a small stretch of sandy beach on which our camp was placed, it is almost impossible to land. The natives had already

cut a narrow trail to the top, about nine inches wide, and while they ran easily up and down it, most novices perspire freely from fear the first few times of ascent and descent. It was not long, however, before I could go up and down without this inconvenience, but I was never able, with my heavy boots, to do so with the ease that the natives did with their bare feet or light leather soles.

After seeing my stuff safely stored in the tent, which Mr. Beermaker most kindly shared with me, I set out for the top of the island, and after the experience just related in connection with the trail I gained the top. On casting my eyes about, rather a novel sight met my gaze. A gang of natives were picking up chunks of guano, a few pairs of Man-o'-War Birds floated lazily overhead, screaming Red-billed Tropic Birds circled the rock, Boobies were coming and going to their roosting places on the sides of the cliffs, and on either hand were the wooded islands. The rest of the day was spent in a systematic search of the island, and I returned to camp well satisfied with my first day's work. The next day work commenced in earnest, numerous birds, lizards and photographs being secured, and out of a cover from a dry goods box, supported by four sticks, a skinning table was erected under the shelter of the overhanging cliff.

As White Rock contained no water for drinking and cooking, and as the only wood was the drift wood the waves brought in, we were compelled to send the canoe to Cleofa Island about every third day for water and wood. I decided to accompany the canoe party on its first trip after my arrival, and, with gun, collecting pistol, and camera, left camp about 6 A. M. The stream in Cleofa having the most water and nearest to our camp came down from the hills on the seaward side of the island, and this necessitated our landing through the surf. The landing was successfully made, and after a full day spent on the island I returned to the canoe loaded down with birds, every pocket of my skeleton coat filled, and some dozen or more good photographs.

But no such good luck attended our departure. On the first attempt to launch the canoe we were swamped by the breakers, and the canoe being overturned, I lost my gun, my birds were spoiled for specimens, and my camera was nearly ruined. On a second trial, however, we passed safely through.

Three weeks were spent on the "Rock," during which time a number of Brewster's Boobies were caught while roosting at night on the top of the island, and Red-billed Tropic Birds were secured in the daytime while on their eggs or with their young. A series of both species, with young of the latter, were put up.

Another trip was made to Cleofa Island in the canoe, and this time we fared as previously, only everything was tied in so that we lost nothing except all the small birds I had gotten with my collecting pistol, with the exception of one Cardinal, which is now in my collection and whose plumage still shows the wetting it got.

During our stay at the Rock the schooner in which we came was wrecked at San Blas by a 'chubasco' when ready to start on her return trip with mail and supplies, and we made our return in a leaky open twenty-foot yawl boat sent out in place of the wrecked schooner.

A few days were spent at Tepic, the capital of the Territory and some fifty miles inland by stage coach. Here I managed to get my camera partly fixed, my watch repaired, and collected a few birds, besides attending to other business I had on hand. From here a trip was made to Santiago by stage, some twenty miles, and it was my intention to go down the river from here to San Blas by canoe, but it proved impracticable and I returned by stage.

On arriving at San Blas I secured a boat and crew and on April 6, at 8 P. M., set sail for Isabella Island, some forty miles northwest of San Blas and twenty miles off the coast. My boat this time was an open twenty-five foot ship's yawl, well caulked, and manned by a captain and two boys. The wind was, as usual, light, but by the next noon the captain pointed out an island and said it was Isabella.

Later on I discovered it was only one of the Tres Marias group, and it was then that I learned that he could not read the compass and was really steering by taking observations by the two tall peaks back of the Plateno Rancho. On returning later to San Blas I found that these peaks were the compass of most of the sailors in that section. The second night out a 'chubasco,' somewhat in the form of a waterspout, passed within a quarter of a mile of us, and the next morning, Sunday, the 8th, found us still about fifteen miles from the island with no breeze, and it was not

until 3.30 P. M. that we landed on the little stretch of sandy beach in the bay on the south side of the island. All during this day we were in sight of large flocks of birds following schools of fish; those which I distinguished were Brewster's Booby, Red-billed Tropic Bird, Heermann's Gull, Man-o'-War Bird, Black Petrel, and Wedge-tailed Shearwater. A number of puffins and small gulls were also seen, but could not be identified.

Isabella Island is three quarters of a mile long by about half a mile wide, 150 feet high at its highest point, with a crater of an extinct volcano almost in the middle of the island. It lies in longitude 105°–106°, latitude 22°–22½°. The northeastern side of the island is covered with long grass about sixteen inches high, while the southwestern side is high and rocky, with stunted trees or bushes scattered here and there. The central part of the island, with the exception of the crater, is low and rocky and covered with bushes, which also cover the sides of the crater. After landing our stores and anchoring the boat out in the little bay, the crew pitched camp, making a tent out of the mainsail and using the jib for a floor covering to sleep on. Nearly four days were spent on the island, during which time I was busily engaged in skinning birds, taking photographs, and collecting eggs of the Blue-footed Booby, Red-billed Tropic Bird, and Man-o'-War Bird. A small Tern — the Pacific Sooty — had already bred and gone, as had also the Royal Tern. One day the crew found a nest of young Great Blue Herons which I had overlooked when going over the island. As the man who had supplied us with provisions had somewhat neglected us, these young birds came in well for food, and were relished by us, as were also fresh eggs of the Blue-footed Booby and Man-o'-War Bird, which we made into omelets. On the afternoon of the third day one of the boys set the long grass on the northeastern side of the island on fire, which burned for twenty-four hours and threatened to drive us from the island. Luckily at this time there were no birds breeding on that part of the island, and by the time we left the fire had burned itself out. With the exception of the boat drifting ashore on the sandy beach one stormy night, which caused no damage, there were no mishaps or startling experiences while on the island. About noon of the 12th we started back for San Blas, and as we had a very heavy fair wind

we made port in about eight hours, stopping on the way to look over a large white rock called Piedra Blanca, in hope of finding some birds breeding there. But in this we were disappointed, as the fishermen were constantly visiting the rock, and while the birds roosted there, none were found breeding.

On my arrival at San Blas I was met by the Capatas of the rancho, who informed me that Mr. Bryant had been very ill ever since my departure, and begging me to come over to the rancho at once, which I did. On arriving at the house, I found him in quite bad shape. As he had had little nourishing food proper for a sick man for some seven days, I at once killed some Chachalacas and doves to make soup of. The next nine days were spent attending to Mr. Bryant's wants, blowing eggs, and collecting a few birds, and on the 21st of April, after packing up his belongings I managed to get him aboard the steamer bound for San Francisco. From this time on to the 3d of May, a few specimens were collected around San Blas during spare time, and on the afternoon of that date I came down with a bad attack of fever, called "colentura" in that section. This laid me up for nearly ten days. On the 17th I caught the steamer for San Francisco. The following day was spent at Mazatlan, and eight days later I arrived off the quarantine station in San Francisco Bay. At this season of the year extra precautions were being taken to guard against yellow fever from the south, and after a rigid inspection I failed to pass and was not allowed to land, being sent to the quarantine station at Angel Island. After remaining here until the authorities were satisfied that I would not come down with yellow fever or any other contagious disease, I was allowed to depart and was sent over to the city by a tug. On the way to the hotel I learned of the death of my friend Mr. Bryant, this being the first news I had heard of him since bidding him good-by at San Blas. Poor Bryant! He was a devoted ornithologist, and well do I remember his last words to me as we parted on the ship: "Bailey, we will get a whack at the hummers down here yet."

Thus ended my trip, which was rather successful in a business way and, even counting hardships and mishaps, was enjoyable, and added many fine specimens of birds, eggs, and a few mammals and insects to my collection.

The following is a list of the birds collected or observed during this trip to San Blas and the neighboring islands.

Annotated List of Birds.

1. **Uria troile californica.** CALIFORNIA MURRE.— Large numbers of these birds were seen from the steamer when going south, and for at least a day before arriving at the Golden Gate coming northward.

2. **Larus occidentalis.** WESTERN GULL.—These birds were common all during the trip, following the steamer both going and coming, and also common on the beaches of the mainland at and near San Blas. On White Rock and Isabella Islands, flocks of from twenty to thirty were ever present while I was skinning birds, and fought for the bodies as I threw them out to them. While I was not engaged in skinning specimens, these birds strutted around camp picking up scraps, and also followed me as I walked over the islands, and if I scared a parent Booby or a Man-o'-War Bird from its nest, not many seconds elapsed before the gulls had their eggs. No nests of this species were discovered on any of the islands or the mainland.

3. **Larus heermanni.** HEERMANN'S GULL.—These birds, like the Western Gull, were ever present on the shores of the mainland, especially near the mouth of the estero, also on both Isabella Island and White Rock. Their habits were similar to those of the Western Gull as regards waiting for bodies to be thrown out to them, stealing eggs, etc., and occasionally they followed a Booby and tried to make it disgorge. One day while sitting on a rock in front of camp at White Rock waiting for lunch, I saw one of a pair of Great Rufous-bellied Kingfishers fishing from a rock about twenty feet further on. As it returned to its perch from one of its little plunges, a Heermann's Gull swooped down and tried to get its food before it could be swallowed. The kingfisher dove to the water and at each descent of the gull, dove below, these tactics being kept up until the gull got disgusted and left. From the actions of some pairs on a rock to the north of Isabella Island I am sure these birds were breeding there, and also on a rock off Cleofa Island, neither place being accessible.

4. **Sterna maxima.** ROYAL TERN.— This large tern was seen on the beaches of the mainland between San Blas and the Plateno Rancho in small flocks of from four to eight. A number also were seen on Isabella Island, where I am positive they had bred previously to my arrival on April 8, as I found a number of nests with egg shells near by, placed on the northern edge of the island. Being very familiar with the eggs of this species I am sure I was not mistaken in their identity.

5. **Sterna antillarum.** LEAST TERN.— For about ten days around April 12 these little terns were common at the mouth of the estero at San Blas, where they were feeding upon schools of small fish which came down with the current. At the time of my departure, May 17, they had entirely disappeared, going northward.

6. **Sterna fuliginosa crissalis.** PACIFIC SOOTY TERN.— I had been told by both the captain of my boat and Mr. Geo. Beermaker, that on the northern grassy slope of Isabella Island I would find thousands of a small white gull breeding, but on going over the ridge I found to my sorrow that they had bred and gone. Everywhere scattered amongst the tall rank grass could be seen the well worn nests of the season, and so thick were they that we could hardly step without treading on a nest. But what puzzled me most was the number of skeletons of dead birds scattered everywhere about. The skeletons were almost complete, with the long wing feathers, tail and head feathers still in place, so I presume that either the gulls or crabs and lizards had eaten everything clean. If these were old birds, and the remains proved clearly that they were, what could have killed them? and what had become of the eggs? as I was unable to find a single nest with even spoiled eggs in it. I should estimate that at least five hundred dead birds were seen, and the cause of their death will have to be explained by some one arriving in time for, and staying through, the breeding season. Mr. Beermaker informed me that when visiting the island the previous year, the last of March, these birds were just laying, but as I paid my visit to their nesting site on April 8, they must breed earlier some seasons than others. A single skeleton was saved and is now in my collection. Large flocks of these terns were seen off Isabella Island, following schools of small fish, and a few roosted on the rocky face of the southeastern end of the island during the daytime.

The cries of this bird, with the squak of the boobies, were most noticeable after dark, and as they could be seen and heard going and coming at all times of night, they probably gather as much food by night as by day.

7. **Puffinus cuneatus.** WEDGE-TAILED SHEARWATER.— A number of birds which I took to be of this species were seen between Cape St. Lucas and Mazatlan, but none were taken, neither were they seen near the coast of San Blas nor around the islands, excepting Isabella.

8. **Oceanodroma melania.** BLACK PETREL.— This species was very common between the mainland and islands, and from what I learned they must have bred on the lower end of Cleofa Island, and on White Rock later in the season, although no eggs were taken during my stay at the latter place.

9. **Phaëthon æthereus.** RED-BILLED TROPIC BIRD.— This beautiful bird I first found breeding on White Rock, and during my stay of three weeks, a number of cavities containing their nearly fully fledged young were discovered, and also fresh eggs. On Isabella Island, April 8 to 12, nearly full grown young and a number of fresh eggs were also found, so I imagine they have two settings. In every case an old bird was found in the cavity with young or eggs, and from a broken and sucked egg I found in one, I am inclined to think that the Western or Heermann's Gulls even entered here for food. If such is the case I know they had a hard time



FIG. 1.—GROUP OF BLUE-FOOTED BOOBIES.
Isabella Island.



FIG. 2.—BLUE-FOOTED BOOBY, FORCIBLY REMOVED FROM EGG.
Note ruffled feathers on neck and wing. Egg in foreground. Isabella Island.

to get it, as I found quite often to my sorrow that the Tropic Bird's powerful, sharp beak would penetrate through my canvas hat, or if the cavity was large enough to permit of it, my heavy canvas jacket. While one of the old birds is always on the nest and gives its shrill scream at the approach of danger, thus making the cavity easily located, the young or egg is not so easily reached as one would think. Only in one case did I find an old bird on its nest where I could photograph it, that case being under a ledge of a cliff and about eighteen inches from the face. The majority were in cavities from two to three feet back, and it takes quite a lot of manœuvring to get either bird or egg out. The majority of the birds I found were in poor plumage, the constant going in and out of the small nesting cavities having worn the beautiful long tail feathers until some of the ends had broken off, while others captured had none or new ones just growing out. Their flight is not unlike that of the terns, and the rapid wing beat and long tail feathers make this bird readily distinguishable from any other at a great distance. Both birds take turns in incubating and caring for the young, and during this period the bird in the cavity is fed by its mate. The female, and sometimes both birds, is found in the cavity for three or four days before the single egg is deposited. While graceful on the wing this bird is most awkward on its feet, and when alighting to look for a nesting site drags itself along like a bird with both legs broken. The coloring of a series of eggs in my collection varies from a creamy dirty yellow ground color, spotted with a darker yellow, to a dark red ground color, spotted with a darker red.

Two cases of removing their young happened while I was on White Rock, both of them similar. Two old birds and their single young were found in a cavity, and I took one old bird to skin that night, expecting to get the remaining parent and young the next morning. On returning the next day great was my astonishment to find the two birds gone, and still further was it taxed when I found, after careful search, the two birds in another cavity twenty to thirty feet away.

9. **Sula nebouxii.** BLUE-FOOTED BOOBY.— This species I did not find south of Isabella Island, where they were breeding abundantly. Few were seen fishing to the south of the island, and while the largest colony was situated on the beach of the cove on the south side, they invariably passed out of the entrance and, circling the island, did their fishing northward. I am inclined to think that these birds never nest near colonies of *Sula brewsteri*, nor do the two species fish over the same area. I should be glad to get other persons' opinions on this subject. At the time of my departure from Isabella Island, April 12, a number of pairs of *Sula brewsteri* had arrived and had started to build nests on a small rocky point forming part of one arm of the bay on the south side of the island, but I am inclined to think their arrival here to nest was caused by the treatment they had received on their own nesting grounds — White Rock. The cause of this departure will be explained later on under that species.

All around our camp, which was pitched under the low bushes bordering the little bay, were pairs of boobies, one or the other of the pair covering the eggs while the mate stood close by. This, however, was during the middle of the day, the fishing being mostly done before ten A. M. and after four in the afternoon, during which time one or the other of the birds always remained on the eggs to keep the gulls from stealing them. The poor boobies had a hard time of it here, as the Man-o'-War Birds nested just back of them in the bushes, and lucky was the booby who passed in the entrance of the bay without having to disgorge part, or maybe the whole, of its day's catch to this robber. Numbers of nests were on the sandy beach just above high tide, while others were still further back under the shrubbery and below the Man-o'-War Birds, and still another colony was situated on the top of the rocky southwestern side of the island. All the birds were very tame, and I think had not been molested since the expedition of the Biological Survey in 1897, as Mr. Beermaker on landing in search of guano deposits in March, 1904, had not found them breeding at that time, nor had he disturbed them in any way. When I first started in to get a series of eggs, I used my foot to remove the booby from them, but after the first few attempts I found that the sharp beak whenever it came in contact with my leg drew blood, and almost penetrated through my cowhide boots, so I soon abandoned this method. Two eggs were generally the complete set and but three sets of three were discovered while on the island, and in some cases highly incubated *single* eggs were found. In case of the latter I am inclined to think the gulls had stolen one of the eggs after incubation had commenced. No nest was made, a slight hollow being scratched in the sand or earth, while those on the rocky side of the island simply deposited them on the bare rock or on the little drifted earth that happened to be on its surface. During the moonlight nights these boobies could be seen going and coming, and I have no doubt their best catches were made at this time, as they were then unmolested by the Man-o'-War Birds. Single fresh eggs gathered by the crew were made into omelets, but the flavor was rather rank.

10. **Sula brewsteri**. BREWSTER'S BOOBY.— This species was common along the coast at San Blas, roosting on the small rocks near the shore and on a large white rock some ten miles west of San Blas, called Piedra Blanca, but on none of these rocks did they breed. All the birds in this section belonged to the colony breeding on White Rock, and many traversed the sixty miles back and forth daily from their nesting and roosting place on the Rock to their feeding grounds near the coast. Never did I see a Blue-footed Booby in this section; hence my assertion that the Brewster's Boobies went east and south from their colony to fish, while the Blue-footed Boobies went northward. Thousands of these boobies were roosting on White Rock and some few had been laying previous to our arrival, but as the workmen had robbed the nests as fast as eggs had been deposited, the birds had become disgusted and stopped laying

for the time being, although they still continued to use the rock as a roosting place. It was the guano from this countless flock of birds, which probably had been breeding there for centuries, that the men were engaged in collecting. During the day when not fishing they roosted on the sides of the island and when the men left the top to come down to supper at six, they returned to the top of the island to roost and make their so-called nests. Many an evening, as I sat at my skinning table or in front of camp waiting for supper, have I watched these birds as they came in from their day's fishing excursion. From about five o'clock on, as far as the eye could reach, could be seen small flocks of from four to twenty making for the island, and after circling half around it, would generally alight on the top, but a few preferred to roost in the caves in the cliffs of the island.

Numerous visits to the top of the rock were made at night after specimens, and a series of some seven pairs were procured by walking up to them while asleep and selecting individual birds as I chose. I had seen colonies of birds before, but none like this, and the sight certainly made one take a long breath. The whole island surface was literally covered with birds, some with their heads and necks stretched out along their backs sound asleep, some picking up bits of bone, long wing-feathers, grass and small chips of stone and guano to form nests with, while others sat on little piles of heaped-up guano with the neck stretched upward watching the approach of a bird about to alight, as if hoping it might be its mate. They always seemed to roost in pairs, each pair always separated, as were also the nests, by enough space to be out of reach of their neighbor's sharp beaks. It was truly a weird sight in the starlight, and the low hissing sound from the birds that were awake, with the shadowy forms floating through space, reminded one of a grave-yard.

One of the most amusing sights I ever saw was the regular "Mexican cock fight," between males of this species. This combat was, I imagined, over the unmated females, or some single male trying to steal a female from another, and started in this fashion: A male in alighting commenced to strut around, craning his long neck and uttering a low hissing sound, and on coming near to some mated pair, or some other male also trying this mode of courting, would suddenly stop. Both males now squatted low on their short legs, their breast sometimes touching the ground, while their long necks were craned upward in a double bow. No regular cock fight could be more complete or interesting. While they did not use their feet, their long wings and sharp beaks were thrust out at their rival, and occasionally they met with open beaks which became locked together in the struggle. Sometimes one would catch the other by the wing, while he retaliated by getting his adversary by the neck, these cases often proving fatal to one or the other of the combatants. Over all this scene was the ever present smell from the guano, which one must get accustomed to if he would study bird life on an island in the Pacific. Birds with broken wings as well as those with little strength were at daybreak quickly put out of the way by the Caracaras, and the gulls made part of their morning meal of these poor unfortunates.

What a sight this must form when all have eggs or young! Now as the men were gathering the guano from all over the top of the rock, and had, on their arrival, driven off the birds and taken their eggs, and were still making a systematic search every morning for fresh eggs for eating, the colony had been, for the time being, driven from their old nesting place, and few birds had laid during my visit of three weeks on the rock. It was this breaking up of their old-time home that led me to think that some of the birds had migrated to Isabella Island, some thirty miles away, as the only suitable near-by place left to them as a breeding place. As the men expected to be through with the guano gathering by the first of June, possibly the birds remained around the rock and bred later on.[1]

11. **Phalacrocorax mexicanus**. MEXICAN CORMORANT.— Numbers of cormorants that I took to be of this species were seen off the rancho, fishing near the surf, and were found to have bred at Tepic previous to my visit there, and also in the lagoons back of San Blas.

12. **Pelecanus californicus**. CALIFORNIA BROWN PELICAN.— These birds were common at San Blas where they sat and fished from the rocky breakwater forming part of the harbor entrance. They were also common off the beach in front of the rancho, often coming on to the beach and seemingly extracting food from the foam cast up by the waves. A few pairs were seen while I was on White Rock, and they probably bred on Cleofa Island later on, as they roosted there. Two pairs were seen while on Isabella Island but none were found breeding. I am inclined to think they came here to fish from the mainland, near the mouth of the Santiago River, where, I was told, there was a large breeding colony.

13. **Fregata aquila**. MAN-O'-WAR BIRD.— This bird I found common everywhere along the coast and islands, in all cases indulging in their well known habit of harassing the boobies to obtain their supply of food. From what I was told by the natives, the birds around San Blas bred on the bushes in a lagoon some miles down the coast, while I found them breeding in great numbers on Isabella Island. The nests on the island were placed on the top of the bushes or on crotches of limbs, the nests being a loosely made platform of sticks and twigs, with generally a few straws or grasses on the inner surface. In some cases the nests were not more than from eighteen inches to two feet above the ground, as on the west side of the island where the bushes are low and stunted, while on the south and eastern sides they were sometimes placed as high as twelve and fifteen feet above ground, the bushes and scrubby trees here permitting of it. At the time of my visit the majority of these birds had eggs, one being a complete set. A few young birds were, however, found on the western side of the island, and it did not take the hot sun

[1] Aug. 14, 1905. Mr. Beermaker, who has just arrived in Los Angeles, informs me that the boobies did not lay again while the men remained on White Rock.



FIG. 1.—AN OLD MAN O' WAR BIRD AT HOME.
Isabella Island.



FIG. 2.—RED-BILLED TROPIC BIRD.
Covering its egg with one wing. Isabella Island.

long to kill any small young that the parents left unsheltered for even a few moments. The majority of these birds were very tame, allowing one to approach within a few feet of them.

Great numbers of dead birds, hanging from the bushes by wings, feet or heads, were scattered over the island, the cause of which I discovered when flushing one from its nest. Their short legs and extremely long wings make it a hard matter for the birds to rise from their nests, especially so when the nest is placed on the top of the bushes, and their wings come in contact with other branches in their effort to rise. A number of times as I watched them in their attempts to alight on or depart from their nest, I saw them become entangled in the foliage, from which position they were unable to rise. The odor from the dead birds, with that given out by the birds themselves, was far from agreeable.

I found that the large eggs of these birds required delicate handling in blowing, numbers of them being broken while using air pressure that any small egg the size of a robin's would stand.

14. **Nettion carolinensis**. GREEN-WINGED TEAL.— I saw two pairs of this duck in the arroyo while at Tepic, and the local sportsmen informed me this bird was very common there earlier in the season, at this time (March 30) nearly all having migrated north.

15. **Spatula clypeata**. SHOVELLER.— A flock of four were seen at San Blas.

16. **Aythya affinis**. LESSER SCAUP DUCK.—A flock of birds that I took to be this species were seen on both visits to Mazatlan, where they were very tame and nearly always in the wake of small vessels anchored in the inner harbor. A few were also seen in the estero at San Blas.

17. **Guara alba**. WHITE IBIS.— Very common around the estero at San Blas, and also on the lagoon back of the town.

18. **Plegadis guarauna**. WHITE-FACED GLOSSY IBIS.— Numbers were shot by my friend Mr. Beermaker, and also by the local Doctor, the latter being about the only ardent sportsman in that section.

19. **Ardea herodias**. GREAT BLUE HERON.— A few pairs were seen fishing along the shore in front of the banana ranch, and young birds were brought in by the crew while we were on Isabella Island. I am sure they bred there, as I also saw old birds fishing at the northern end of the island. None were seen while at the Tres Marias Islands.

20. **Herodias egretta**. AMERICAN EGRET.— It must have been this bird about which the natives at San Blas had so much to say, stating that its plumes sold for $40 gold an ounce. They told me how some men from San Francisco had come down for plumes, and meeting with much success one season, returned the next season prepared to slaughter every one in the country. After building an ark, in which they worked the esteros for some weeks, they were stopped by the Mexican authorities and their stock confiscated. While I did not take any specimens myself, I am confident that the bird described by the natives was this species.

21. **Fulica americana**. AMERICAN COOT.— Numbers of these birds

were seen, and one was shot in the arroyo at Tepic where at the time of my visit they had half grown young.

22. **Tringa minutilla.** LEAST SANDPIPER.— A few stray birds were seen at the mouth of the arroyo and on the beach in front of the banana ranch. While on my way back from Isabella Island a number of flocks which I took to be this species passed our boat going northward.

23. **Ereunetes occidentalis.** WESTERN SANDPIPER.— A single bird of this species was seen at Isabella Island. It evidently had become tired and had dropped out to rest from a migrating flock, no other specimen being seen while on the island.

24. **Totanus flavipes.** YELLOW-LEGS.— During March these birds were quite common at low tide on the estero flats at San Blas, but by the last of April all had disappeared, although a few other waders remained.

25. **Symphemia semipalmata inornata.** WESTERN WILLET.— Common on the estero flats and beaches during all of my stay in that section, and one specimen was also taken on the beach in front of camp at White Rock, March 4.

26. **Numenius hudsonicus.** HUDSONIAN CURLEW.— Quite common and tame on the estero flats at San Blas, numbers being shot by Mr. Beermaker, the local Doctor and myself, and were relished greatly in that section of the country where good meat is scarce.

27. **Squatarola squatarola.** BLACK-BELLIED PLOVER.— This bird, like the preceding species, was also common on the estero flats, numbers being shot for food.

28. **Ægialitis nivosa.** SNOWY PLOVER.— Two flocks were found on the sandy beach between San Blas and the banana ranch and were very tame, allowing me to come within two or three feet before running off to hide. The beach was an ideal spot for breeding, and they probably remained and bred there.

29. **Hæmatopus frazari.** FRAZAR'S OYSTER-CATCHER.— Birds that I took to be of this species were fairly common on the beaches of the mainland near San Blas, and also on White Rock and Isabella Island. A single specimen shot on White Rock before the loss of my gun, corresponds very closely to *H. palliatus*, but not sufficiently so to refer it to that species. Birds collected by the Biological Survey Expedition of 1897 (see North America Fauna No. 14, Natural History of the Tres Marias Islands, Mex.), both on the mainland and at Tres Marias Islands, were recorded as *H. palliatus*, and possibly those I saw on the mainland were this species.

30. **Jacana spinosa.** MEXICAN JACANA.— Very common in the arroyo at Tepic, and from the birds shot and examined it was evident that they had already bred there previous to my visit on March 30.

31. **Lophortyx douglasi.** DOUGLAS QUAIL.— These handsome little birds, not unlike the California Quail except in color, were very common around San Blas, and as there were few to shoot them, they were quite tame. Flocks of from ten to twenty were flushed a number of times, and

while dusting themselves in the paths they could be approached to within six feet, or even less, before they would take to the brush. This bird was rather scarce near Tepic, as compared to the coast region. Up to the time of my departure, May 17, they had not bred and few had paired.

32. **Ortalis vetula maccalli.** CHACHALACA.— To the right of the ranch house in a small ravine at the foot of the hill stood a tree which during my stay in that section had a green fruit on it about the size of a grape. It was this fruit that the Chachalaca seemed to especially like, and nearly every morning a flock of from six to ten could be found feeding there. The flesh is similar to that of the wild turkey, and the majority of the specimens secured were made into soup during the last illness of W. E. Bryant. Another large flock was seen in a dense jungle between San Blas and the rancho, but up to the time of my departure, May 17, none were found breeding.

33. **Columba flavirostris.** RED-BILLED PIGEON.— Few large flocks were seen, the majority being in flocks of from four to eight, and they always kept well toward the top of the trees. These birds, I was told, breed in the tall timber on the mountain sides back of the rancho, but none were found breeding up to May 17.

34. **Columba flavirostris madrensis.** TRES MARIAS PIGEON.— A few were secured on Cleofa Island, March 10, but after the drenching caused by the canoe upsetting they were hardly fit for the cabinet, so the specimens were eaten with relish by both Mr. Beermaker and myself. This was really the only bird that could be called wild on the islands. They were always found in pairs, and generally in the tops of the tallest trees. No nests were found, as it was too early for any of the land birds to be breeding except the Double Yellow-headed Parrot.

35. **Zenaidura macroura.** MOURNING DOVE.— Quite common on the mainland around San Blas, always keeping on the ground under the dense undergrowth. No nests were discovered up to the time of leaving.

36. **Melopelia leucoptera.** WHITE-WINGED DOVE.— This dove was quite common around the rancho, frequenting the banana grove in search of food, which it secured around the stems of the plants and amongst the fallen leaves. It also was very common under the thick foliage on the uncleared land or in the jungle.

37. **Columbigallina passerina pallescens.** MEXICAN GROUND DOVE. — Flocks of these were quite numerous and tame around the banana ranch, often coming up to the house and under the front porch to pick up grain dropped by the horses while feeding. They were also found in large flocks on the cleared land around San Blas.

38. **Cathartes aura.** TURKEY VULTURE.— Only two pairs were noted during my whole stay on the mainland and these were back of the rancho, but on White Rock they were very common, while the Black Vulture was absent. Their main food on the islands seemed to be, like that of the gulls and caracaras, the victims of the booby fights, with

any decayed animal matter cast up by the waves. They were found breeding on Cleofa Island but none were breeding on White Rock, they preferring the shelter of the trees and shrubbery found on the former island. None were seen on Isabella Island.

39. **Catharista urubu.** BLACK VULTURE.— Very common and very tame on the mainland, where they acted as scavengers and were unmolested. The lower branches of almost every cocoanut palm in San Blas was their roosting place by day and night, and around the slaughter house were so tame that they merely hopped to one side to allow one to pass. The top of the old stone walls of the former Custom House, located on a high bluff, was, I was told, their favorite nesting place, but up to the time of my leaving they had shown no signs of nesting.

40. **Urubitinga anthracina.** MEXICAN BLACK HAWK. — A large tree in a cleared field about a mile and a half back of town, contained a nest and two eggs of this species. Both eggs were pipped at the time of securing them — May 14 — but I was never able to get within gun reach of either of the old birds.

41. **Asturina plagiata.** MEXICAN GOSHAWK.— While walking through a cleared field back of San Blas, April 28, a male of this species was flushed from a large tree and secured. Thinking they might be breeding in a cliff not far off, I turned my steps thither and was rewarded by seeing the nest some 150 to 200 feet up the side of the cliff and in a tree growing out of the side of it. The female was on the nest at the time, and, though I wounded the bird after scaring her from the nest, I was unable to secure her. As the sun was now well up and it was too late in the day to try to make the hard climb, I left and returned early the next morning. A path was followed up the back of the hill to the top, but on coming to a point above the nest I found, to my disgust, that it contained only one egg, and that the nest and tree were placed in such a position that it was really risking one's neck to get it. While I think I should have run the risk had it contained a full set, one egg was not sufficient inducement, so I returned without the egg and with one bird.

42. **Falco columbarius.** PIGEON HAWK.— A single bird was seen a number of times while on White Rock, generally chasing a Red-billed Tropic Bird, but never did I see him capture a bird of this species. While I had my gun I was unable to secure a shot, but later on one of these birds would swoop down on the caracaras and gulls that were feeding on the bodies of specimens I had thrown to them, and become monarch of all he surveyed. It was really amusing to see this little bird take and hold the fort against all comers. Starting from a perch on a jagged rock about 25 feet above my head, it would swoop down over the birds engaged in picking the carcasses to pieces, and, turning on its upward flight, descend and strike at them before they could take wing and get away. Only once did any bird oppose him or show fight and he — a Turkey Vulture — was soon put to route, while the caracaras were more afraid of him than the

gulls. One bird only was seen while on Isabella Island, but after watching him chase a Tropic Bird for some time he made off for the distant Tres Marias Islands and was soon lost to sight.

43. **Falco sparverius** subsp? SPARROW HAWK.— Two females were secured in Tepic. April 1. A pair were also generally found on a dead palm tree stump on the banana ranch where they had had their nest the previous season.

44. **Polyborus cheriway.** AUDUBON'S CARACARA.— A number of pairs were seen on the mainland between the rancho and San Blas. They permitted one to come within twenty feet of them before taking wing.

45. **Polyborus cheriway pallidus.** TRES MARIAS CARACARA.— These birds were very abundant on White Rock during my stay, and also on Cleofa Island where they bred.

46. **Screech Owl.**— A single bird of some species of Screech Owl was flushed from a cavity on Isabella Island, and although I followed it for some distance I was unable to bring it down.

47. **Horned Owl.**— Some species of Horned Owl was heard one night from the porch of the ranch house by both Mr. Bryant and myself, but I was not able to secure it.

48. **Glaucidium phalænoides.** PYGMY OWL.— The pair of birds collected occupied a woodpecker hole in a dead palm stump at the side of the ranch house, and after waiting some little time till I was sure from their actions that they had laid, I cut the hole open April 19. Instead of eggs I found the hole half full of shelled corn, the little fellows having picked it up at night from the ground outside the kitchen where the cook had been sorting it before making torteas. I then gathered in the pair and found no sign of breeding when dissecting them. Several other pairs were seen around the rancho, especially in the dense thickets back of the house, and they seemed to be able to get around in the bright sunlight as well as any other bird.

49. **Amazona finschi.** FINSCH'S PARROT.— These birds were very common around the rancho and their noisy squeak could be heard the last thing before dark and the first thing in the morning as they passed back and forth from the wild fig trees where they were feeding. The palm trees seemed to be their favorite nesting places, and a set of three pure white eggs, about the size of a Belted Kingfisher's, were secured the last week in March. None of this species were noted at San Blas, some eight miles away.

50. **Amazona albifrons.** WHITE-FRONTED PARROT.— This species was very common around the town of San Blas only, none being seen over at the ranch some eight miles away. During the hot part of the day they kept to the palms growing within the town, while in the late afternoon and early morning they could be found feeding in the bushes and trees on the outskirts of the town.

51. **Amazona oratrix.** DOUBLE YELLOW-HEADED PARROT.— This

parrot was very common on Cleofa Island, feeding on the wild figs which at the time of my visit were ripe, but none were seen on the mainland during my stay there, the exception being tame birds of which there were a number.

52. **Conurus canicularis.** RED-AND-BLUE-HEADED PARRAKEET. — Flocks of from four to ten were very common along the coast, and could be seen at all times of day flying back and forth from one feeding ground to another, their constant chatter while on wing, and rapid flight, making them easily distinguishable. The natives kept them on perches in and around their houses as pets, and they soon became very tame and attached to their owners.

53. **Crotophaga sulcirostris.** GROOVE-BILLED ANI. — Abundant around San Blas and Tepic where they were following the cattle and feeding like Cowbirds.

54. **Trogon citreolus.** CITREOLINE TROGON.— Quite common around San Blas, particularly back of the rancho where they kept well to the tops of the tallest trees and from which could be heard at any time of day their familiar whistle.

55. **Momotus mexicanus.** RUFOUS-CROWNED MOTMOT.— By no means common, only three specimens being seen while at San Blas.

56. **Ceryle cabansi.** TEXAN KINGFISHER.— This little bird, while not common, was always found in pairs in the different arroyos, and a nest was discovered in a bank where gravel had been taken out for house building.

57. **Ceryle torquata.** GREAT RUFOUS-BELLIED KINGFISHER.— This handsome bird I found frequenting the arroyo back of the rancho, and it was also seen on White Rock, Tres Marias Islands, as previously mentioned under the heading of *Larus heermanni*.

58. **Ceophlœus scapularis.** MEXICAN PILEOLATED WOODPECKER.— Numbers of these birds were seen in the large timber back of the rancho when first arriving, but as they soon disappeared altogether, I suppose they were migrating.

59. **Centurus elegans.** ELEGANT WOODPECKER.— Quite common around the rancho and also at San Blas where it nested in holes in the palm trees. A pair having their nest in a dead palm stump in front of the ranch house had not laid up to the time of my departure.

60. **Dryobates scalaris graysoni.** GRAYSON'S WOODPECKER.— Quite numerous on Cleofa Island and, like all the other island birds, was very tame. The specimens collected were destroyed by the upsetting of our canoe.

61. **Chordeiles acutipennis texensis.** TEXAN NIGHTHAWK.— Very numerous around San Blas during the week beginning May 10.

62. **Amazilis graysoni.** GRAYSON'S HUMMINGBIRD.—Specimens of this species were secured on Cleofa Island March 10, but owing to my mishap in getting through the breakers I have nothing to show for them.

63. **Iache lawrencei.** LAWRENCE'S HUMMINGBIRD.— One specimen of this species was also secured on Cleofa Island on March 17 but ruined in the general scramble for shore and effort to save other effects.

64. **Tyrannus verticalis.** ARKANSAS KINGBIRD.— A single specimen was taken March 29, during the wave of migrating birds. This species was extremely common during my stay at Tepic.

65. **Tyrannus melancholicus couchi.** COUCH'S KINGBIRD.— Quite common around San Blas, being one of the first of the smaller birds to breed. Large flocks of these were seen at Tepic, March 30 to April 5, going northward.

66. **Pitangus derbianus.** DERBY FLYCATCHER.— This was one of the commonest birds around San Blas and the rancho, and also at Tepic, and its nest could be found in almost every thorny tree. Few nests up to the time of my departure contained eggs, of which I examined some twenty-five or more.

67. **Myiarchus lawrenceii.** LAWRENCE'S FLYCATCHER.— A pair was shot at San Blas, March 25, and while not common, a number of pairs were seen.

68. **Myiarchus lawrenceii olivascens.** OLIVACEOUS FLYCATCHER.— Numbers were seen during both trips to Cleofa Island, being unusually tame. One specimen was secured, but shared the fate of all the other specimens taken on this island.

69. **Cissilopha san-blasiana san-blasiana.** SAN BLAS JAY.— This bird was quite common around San Blas and the rancho, it nesting in the tall trees bordering the arroyo back of the latter place.

70. **Corvus mexicanus.** MEXICAN CROW.— No palm tree seemed complete without a pair of these birds as regular residents. They seemed to roost always in the same palm, and later on nested in the place occupied by them the previous year. They were very tame, allowing one to come within ten feet or even less before hopping or flying to one side, and their plaintive little cry could be heard from the house tops or trees in the garden any time of day. During the time the wild figs were ripe, these seemed to be their main article of food, and I have seen as many as forty in one small tree at a time. Nest building was still being carried on at the time of my departure.

71. **Tangavius æneus æneus.** BRONZED COWBIRD.— Quite numerous in flocks at San Blas, especially around a slaughter house with cattle yards adjoining. No birds of this species were seen while at Tepic.

72. **Cassiculus melanicterus.** MEXICAN CACIQUE.— This beautiful oriole was very common around San Blas and the rancho, in fact the commonest bird in that section. A large number of nests were inspected before my departure but none had eggs, although some had been finished a week or more. One bird having a nest in a tree at the side of the ranch house had been building for some six weeks, and although it seemed finished and the birds had stopped carrying in material, no eggs had been deposited

two weeks later. One of the finest nests I saw, and now in my collection, was attached to the end of a cocoanut palm leaf and measured three feet three inches in length.

73. **Icterus pustulatus.** SCARLET-HEADED ORIOLE.—This species, while not quite so common as the preceding, was nevertheless not scarce, and almost every thorn tree that contained a nest of the former species would be sure to have a nest of this species also. The majority of the nests were empty, although some good sets were secured, among them one with the egg of a Bronzed Cowbird.

74. **Icterus graysoni.** GRAYSON'S ORIOLE.— Specimens of this bird were secured easily on Cleofa Island during both trips but were unfortunately lost with the other specimens. I had hardly cut my way through the cacti at the entrance to a small arroyo on the island before one of these birds came down from a topmost branch to inquire as to what this strange proceeding might be. On sitting down and chirping to it I was almost able to get within arm's reach, and when I was walking up the cañon numbers of these birds showed but little fear of me.

75. **Megaquiscalus major obscurus.** COLIMA BOAT-TAIL.— According to Ridgway's 'Birds of North and Middle America,' Part II, page 241, specimens taken at San Blas are now referred to this species. These birds were very common, almost as much so as barnyard fowls. They would come in under the tiled roofs and descend to the floor of my room, while many times I sat at the dining table and watched one or a pair fly on to the bread basket and commence picking at a piece, sometimes even on to the table. It was a pleasure while sitting at the table to snap small pieces of bread on to the floor and watch them race for and greedily devour it. The meat hanging on the racks of the out door markets or stalls was reduced many a pound by these birds. Often while in San Blas I saw as many as ten or twelve clinging to the pieces of meat and picking away for dear life, unmolested. During the first part of May many were breeding and most of the trees around town had their full share of nests. One tree from which I took a series of eggs stood next to the Custom House, almost in the middle of the street, and about a week later the same nests all had eggs in them again.

76. **Carpodacus mexicanus** subsp.? HOUSE FINCH.— A pair was taken at Tepic March 29.

77. **Spizella socialis** subsp.? CHIPPING SPARROW.— A single bird was taken at Tepic the last day of March and numbers of others were seen, all apparently migrating.

78. **Guiraca cærulea lazula.** WESTERN BLUE GROSBEAK.— A female of this species was secured during my stay in Tepic which, with other small birds, seemed to be migrating northward.

79. **Saltator plumbiceps.** GRAYSON'S SALTATOR.— A male was secured at Tepic.

80. **Ampelis cedrorum.** CEDAR WAXWING.— A pair was secured from a large flock while at Tepic and a few were noted eating the wild figs back of the ranch house.

81. **Dendroica auduboni.** AUDUBON'S WARBLER.— A female was taken at Tepic, apparently migrating northward.

82. **Icteria virens longicauda.** LONG-TAILED CHAT.— A male was taken at Tepic during the migration of small birds.

83. **Mimus polyglottos leucopterus.** WESTERN MOCKINGBIRD.— A pair were seen at Tepic, but not secured.

84. **Cardinalis cardinalis mariæ.** TRES MARIAS CARDINAL.— One specimen, a male, was saved from the specimens taken on Cleofa Island March 10 and 17 but it is very much bedraggled. This bird I generally found down toward the shore of the island near the little fresh-water streams, and it was generally as tame as the Grayson's Oriole.

85. **Pheugopedius felix.** HAPPY WREN.— This little bird was very common around San Blas and fairly common around Tepic. Numbers of nests of this species were discovered, generally in the lower limbs of the thorny trees occupied by the orioles and Derby Flycatchers. The nest was generally a long tube constructed of fine grass and stopped up at one end. This was bent over a limb and a few grasses fastened it in place or kept it from slipping over after the little wren had entered by the other end. In other words, the nest was a complete elbow, the entrance on the under side of one end, while over the limb and down in the other end was the nest proper, where the eggs were deposited. I must have examined at least twenty of these nests, but up to the time of my departure none had eggs, while all seemed finished.

THE WEST INDIAN BLACK FORMS OF THE GENUS CŒREBA.

BY AUSTIN H. CLARK.

AMONG the West Indian members of the genus *Cœreba* are two peculiar forms, one known as *Cœreba atrata* (Lawr.) from the island of St. Vincent, and the other, *C. wellsi* (Cory), from the island of Grenada, which are entirely black. Mr. Ridgway has suggested (Proc. U. S. Nat. Mus., Vol. VIII, 1885, p. 28) that these may prove to be merely phases of plumage of the normally colored birds inhabiting the same islands, and I shall in the present paper advance reasons for this supposition.

In the genus *Cœreba*, all the species are (except in these two cases) dark above, with a light superciliary stripe, and yellow, or yellow and white, below. Most of them have a yellow or yellowish patch on the rump, and all have the bases of the primaries (forming a wing spot) and the tips of the outer rectrices white. It is evident then, that the genus has a definite and well marked color-pattern. In the black forms there is an olive tinge on the underparts (except the throat) and rump, corresponding to the yellow markings of the normally colored birds *inhabiting the same islands*. The black forms are of the same color from the first appearance of feathers, and not of more normal coloration in the younger stages as we might expect were these forms simply species widely divergent from the generic type.

The black birds are identical in size, coloration of naked parts, actions, notes, and nesting habits with the normal birds of the same islands. In the case of *Cœreba wellsi* the eggs are exactly alike.[1]

In the genus *Cœreba* no two species are known to inhabit the same locality.

In certain mammals (for example, *Canis occidentalis* Rich., *Vulpes fulvus* Desm., and *Sciurus carolinensis* Gmel.) melanistic

[1] I have never seen the eggs of the normal form of *C. atrata*.

forms are common, and sometimes occur only in restricted portions of the habitat of the species, as in the case of the black phase of one of these Honey Creepers (*C. wellsi*). A rather interesting and somewhat similar phenomenon is shown in the females of the American swallow-tailed butterfly (*Papilio glaucus* Linn.) which are yellow like the males in the northern part of the range of the species, but sooty black in the south.

In the case of these Honey Creepers, the black colored birds, possessing a well marked dominance over those of normal color, have gradually increased in proportion, until the typical phase has been practically eliminated from those islands on which the black phase occurs.

As the evidence seems to show that these two black Honey Creepers are conspecific with the normal forms inhabiting the same islands, the species on St. Vincent must be known as *Cœreba atrata* (Lawr.),[1] that name having page precedence over *C. saccharina* (Lawr.),[2] applied to the bird in the normal phase of plumage. The Grenada species must stand as *Cœreba wellsi* (Cory).[3]

The two birds with their synonymy and distribution are as follows: —

Cœreba atrata (Lawr.). St. Vincent.

Normal form.

MOLASSES BIRD; SUCRIER; YELLOW BREAST.

Certhiola saccharina LAWR., Ann. N. Y. Acad. Sci., Vol. I, p. 151 (1878); LAWR., Proc. U. S. Nat. Mus., Vol. I, pp. 190, 487 (1878); CORY, List Birds W. I., p. 9 (1885); RIDGW., Proc. U. S. Nat. Mus., Vol. VIII, pp. 28, 30 (1885); CORY, Auk, Vol. III, p. 50 (1886); Birds W. I., p. 64 (1889); SCL., Cat. Birds Brit. Mus., Vol. XI, p. 42 (1886); [CLARK], W. I. Bull., Vol. V, p. 86 [1904].

Cœreba saccharina CORY, Auk, Vol. VIII, p. 39 (1891); Cat. W. I. Birds, pp. 17, 116, 134 (1892); RIDGW., Birds No. & Mid. Am., Vol. II, p. 415 (1902); MAYN., Cat. Birds W. I., p. 26, No. 249 (1903).

[1] Lawrence, Ann. N. Y. Acad. Sci., Vol. I, 1878, p. 150.
[2] Lawrence, Ann. N. Y. Acad. Sci., Vol. I, 1878, p. 151.
[3] Cory, Auk, Vol. VI, 1889, p. 219.

Formerly not uncommon in the vicinity of Kingstown and the immediate windward district of St. Vincent, but now exceedingly rare, if not actually extinct.

Black Form.

BLACKBIRD.

Certhiola atrata LAWR., Ann. N. Y. Acad. Sci., Vol. I, p. 150 (1878); Proc. U. S. Nat. Mus., Vol. I, pp. 190, 487 (1878); LISTER, Ibis, 1880, p. 40; SALV. & GODM., Biol. Cent. Am., Aves, Vol. I, p. 250 (1883); RIDGW., Proc. U. S. Nat. Mus., Vol. VIII, pp. 28, 30 (1885); CORY, Auk, Vol. III, p. 53 (1886); Ibis, 1886, p. 473; SCL., Cat. Birds Brit. Mus., Vol. XI, p. 47 (1886); CORY, Birds W. I., p. 67 (1889); RENDALL, Zoölogist, 1897, p. 447; NICOLL, Ibis, 1904, p. 563; [CLARK], W. I. Bull., Vol. V, p. 86 [1904].

Cœreba atrata CORY, Auk, Vol. VIII, p. 40 (1891); Cat. W. I. Birds, pp. 17, 116, 134 (1892); RIDGW., Birds No. & Mid. Am., Vol. II, p. 422 (1902). MAYN., Cat. Birds W. I., p. 25, No. 245 (1903).

Abundant all over the island of St. Vincent.

Cœreba wellsi (*Cory*). Grenadines and Grenada.

Normal Form.[1]

LOUIS D'OR; SUCRIER.

Certhiola sp. LAWR., Proc. U. S. Nat. Mus., Vol. I, p. 278 (1878).

Certhiola atrata (!) LAWR., Proc. U. S. Nat. Mus., Vol. I, p. 269 (1878).

Certhiola saccharina RIDGW., Proc. U. S. Nat. Mus., Vol. VIII, pp. 28, 30 (1885); CORY, Auk, Vol. III, p. 50 (1886); SCL., Cat. Birds Brit. Mus., Vol. XI, p. 42 (1886); WELLS & LAWR., Proc. U. S. Nat. Mus., Vol. XI, p. 613 (1886); CORY, Birds W. I., p. 64 (1889); [CLARK], W. I. Bull., Vol. V, p. 86 [1904] (Grenadines).

Cœreba saccharina CORY, Cat. W. I. Birds, pp. 17, 116, 134 (1892); WELLS, Auk, Vol. XIX, p. 348 (1902); Birds Carriacou, Grenada Handb., 1904, p. 150, No. 69; RIDGW., Birds No. & Mid. Am., Vol. II, p. 415, and footnote (1902).

The normal phase of plumage of *C. wellsi* is exceedingly rare on Grenada. Mr. Wells, who lived nearly all his life on the island,

[1] Certhiola guahensi Cory (Auk, Vol. VI, p. 219, 1889) was founded on a specimen of Cœreba luteola (Cab.) taken on Grenada.

never met with one, and the only authentic specimen known to me is one which was shot near Point Saline in the spring of 1904 by Mr. Charles Vernet of St. George's, who very kindly presented it to me. He informed me that, although he has collected birds for a number of years at Grenada, he never saw but this one example. It is identical with a large number of others obtained by myself on the Grenadines.

On the small islands between Grenada and St. Vincent, this form is very abundant; in fact it is one of the commonest birds. It occurs on Bequia, Battowia, Balliceaux, Mustique, Canouan, Mayreau, Union Island, Prune Island, Frigate Rock, Petit Martinique, Tobago Keys, Carriacou (and neighboring islets), and Isle Ronde (with outlying keys).

Specimens of normal *C. wellsi* differ from normally colored *C. atrata* from St. Vincent in being smaller, with a shorter and weaker bill (just as the black forms from the two islands differ), and they are not so dark above.

Black Form.

BLACK SEE SEE.

Certhiola wellsi CORY, Auk, Vol. VI, p. 219 (1889); [WELLS], Birds Grenada, Grenada Handb., 1904, p. 147, No. 12.

Certhiola atrata LAWR., Proc. U. S. Nat. Mus., Vol. I, pp. 269, 487 (1878); RIDGW., Proc. U. S. Nat. Mus., Vol. VIII, pp. 28, 30 (1885); CORY, List Birds W. I., p. 9 (1885); Auk, Vol. III, p. 53 (1886); SCL., Cat. Birds Brit. Mus., Vol. XI, p. 47 (1886); WELLS & LAWR., Proc. U. S. Nat. Mus. Vol. IX, p. 612 (1886); CORY, Birds W. I., p. 67 (1889).

Abundant all over the island of Grenada, to which island it is confined.

BIRDS OBSERVED IN THE FLORIDA KEYS.

BY HENRY W. FOWLER.

WHILE searching for land snails in the Florida Keys for Mr. Clarence B. Moore, between Cape Sable and the Marquesas Keys, I incidentally observed a number of birds. As some of them may prove of interest I give an annotated list made during June, 1904.

1. **Larus atricilla.** GULLIE; GULL; BLACK-HEADED GULL.— Seen on the bouys approaching Key West, and also about Cudjoe's and Snipe Keys. The bouys mentioned were whited with bird excreta and were used either for resting or roosting by sea-birds.

2. **Sterna hirundo.** TERN; BLACK-HEADED TERN; REDSHANK.— One seen off the Marquesas and many others about West Cudjoe's and Snipe Keys. June 22 they were found in numbers breeding on Hailer's Rock. One egg contained a young bird about to hatch.

3. **Sterna antillarum.** KILLING-PETER.— Breeding in some numbers together with the former on Hailer's Rock. From an ornithologist's point of view this is one of the most interesting places visited. It is a low, small, flat island of sand, with a rocky foundation, off Bahia Honda Key. The vegetation consists of a low growth of bushes, with here and there more or less sand. The southern end is of broken or excavated rock leaving numerous tide-pools with an abundant supply of food in the form of anchovies, etc., for most water birds. Three eggs were found to be the exception in the nest of this species, seldom more than two occurring, and sometimes only one. The nest is a mere shallow depression in the sand, and those found were all situated more or less to the lee of the island. They were scattered here and there, and rather close at times. Some were along the beach but always above tide-line. At our approach the birds all flew from the ground in a body, and continued to utter their sharp, grating cries while flying about overhead. The eggs of this and the preceding are robbed by the turtle-hunters, and others, and used as food. I also saw this bird about Snipe Key.

4. **Pelecanus fuscus.** BROWN PELICAN.— Key West, Boca Grande, Boca Chica, Riding and Snipe Keys. They were numerous about the Marquesas Keys catching mullets (*Mugil*) and other fish. When flying the strokes of the wing may be heard at times for quite a distance. When flying about the shallows they frequently drop into the water with a loud clumsy splash, though not always successful in capturing a fish. One was found which had apparently accidently committed suicide by transfixing its beak in a forked branch of a mangrove. A flock of these birds frequented the rocks about Hailer's Rock where they can easily obtain plenty of finny food.

5. **Fregata aquila.** MAN-O'-WAR HAWK.— Seen about Key West either high in the sky or frequently darting down into the shallow water, among the vessels at anchor in the harbor, to pick up some scrap of food. Mr. S. Brown observed one swallow a gar (*Tylosurus*) fully a foot in length. Most of the birds seen had white throats, and the nearly uniform black ones were only occasional. When seen at sea they sail very high, mostly in a straight line, though sometimes flapping their wings a little. I saw them at Riding Key and large flocks about the Marquesas. Although reported to breed on some of the islands I did not meet with any nests. A common impression prevalent among a number of fishermen and others, and which I believe has already been noted before, is that these birds will chase and pounce on gulls which immediately vomit. This is then caught in the beak of the marauder, before it reaches the water, and swallowed. The robber if not satisfied will still chase his victim again and sometimes catch him about the neck to repeat the operation. It was also reported that the gulls will cast their excreta and that the Man-o'-War treats it in the same manner. However, I did not observe any of these attributes and merely submit them based on what seemed to me largely reliable information.

Upon inquiry concerning the Flamingo (*Phœnicopterus ruber*) or "Falamingo" as it was called, it appeared to be either very rare or probably exterminated. None seemed to have been noted during the last ten years.

6. **Ajaia ajaja.** PINK CURLEW.— One reported from Riding Key though I did not meet with the bird myself. They were also reported to occur on the Marquesas.

7. **Guara alba.** WHITE IBIS; CURLEW; BROWN IBIS.— Flock of a dozen or more adults, and a single brown bird, seen about the bird-rock off Vaca Key.

8. **Ardea occidentalis.** BIG WHITE HERON; WHITE HERON.— Marquesas, Boca Grande, Ballast, Boca Chica, Sugar Loaf, No Name, Vaca, Grassy, West Cudjoe's and Snipe Keys. First observed on Woman Key and Key C far out from shore. In such places they have a good chance to look out for both food and danger. They are very shy and will not permit even a fair rifle-shot, suddenly flying off into the cover of the thick woodland. They may be seen wading in the water sometimes up to their bellies. They usually frequent shallower water, often standing perfectly motionless or walking about like great white sentinels, their snowy plumage enabling one to distinguish them at a very great distance. For the same reason they may also be located if in the trees, the contrast being very pronounced in the green foliage. Their flesh is used as food and is reported to be of good quality. It is only the younger birds which are preferred for this purpose, as the old ones are said to be tough. At the Marquesas I noticed as many as a dozen individuals stationed about in the shallows at one time. In the mangroves I saw traces of roosting of either these or the other herons.

A large example was killed on Sugar Loaf Key which had swallowed

a large sheepshead (*Archosargus*) of about ten inches in length. As a result of this extraordinary feat the fish had completely filled the abdominal cavity, greatly crowding the viscera and to the apparent great discomfort of the bird. In fact it was so thoroughly gorged that it had little disposition to fly, and made but little resistance when captured. No sex organs were developed.

9. **Ardea herodias wardi.** BIG BLUE HERON; BLUE HERON.— Large nests, probably of this species, were seen in the mangroves on the Marquesas. I also saw several birds there and others on Mangrove and Snipe Keys.

10. **Hydranassa tricolor ruficollis.** LOUISIANA HERON. — Boca Chica, Sugar Loaf and Knight Keys. Common on the bird-rock off Vaca Key, associated with the White Ibis, Green Heron, dark and white plumaged Little Blue Herons, Kingbird, Grackles and Red-wings, all of which appeared to roost there in numbers. When disturbed the Grackles and Red-wings rose up in great flocks from the undergrowth, all keeping up an incessant clucking. The water birds possibly used this roost to some extent to avoid the numerous mosquitos of the mainland. At our approach the herons whirled about overhead in flocks, but usually alighted again in or near the same places, such as the tree-tops.

11. **Florida cærulea.** LITTLE BLUE HERON.— Seen at Mangrove Key and the Marquesas Keys.

12. **Butorides virescens.** BITTERLING.— Found in some numbers on the roost north of Vaca Key. Mostly seen down among the lower bushes or flying near the water, and not at all shy. Their familiar cry was frequently heard.

13. **Nycticorax violaceus.** GAULDIN.— Marquesas, Boca Chica, Sugar Loaf, West Cudjoe's and Riding Keys. Used as food.

14. **Symphemia semipalmata.** WILLET.— The shrill and plaintive whistling cry of this bird was heard at Cudjoe's Key where about half a dozen individuals were seen.

15. **Rallus crepitans scottii.** MUD HEN.— One example killed on West Cudjoe's Key, and another with young was reported from Riding Key June 26. This is regarded as a game-bird.

16. **Ochthodromus wilsonius.** RING-NECKED SNIPE.— A flock of about ten were seen on Ballast Key along the rocky shore. They were quite tame, keeping but a short distance ahead and continually uttering their piping notes. A pair also frequented Hailer's Rock where they were probably breeding as two small eggs, smaller than any of the terns,' were found.

17. **Columba leucocephala.** PIGEON.— Boca Grande, Boca Chica, Sugar Loaf, No Name, Vaca, Bahia Honda and Summerland Keys. A flock of about twenty-five was seen at one time on the Marquesas, and while frequently observed at various other places in this group they were always shy. Usually but two or three were seen at one time and then as they were flying about from one island to another. They seemed to prefer the concealment afforded by the luxuriant vegetation.

18. **Columbigallina passerina terrestris.** DOVE; MOURNING DOVE; TOBACCO DOVE.— On the island of Key West I found them in the low grass in the more open land, and either solitary or in pairs. Their flight is short and steady, and their cry similar in dolefulness to that of *Zenaidura macroura*. At Boca Grande Key they were feeding along the beach and were very tame. Abundant on the Marquesas, and also seen on Big Pine, Vaca and Summerland Keys.

19. **Cathartes aura.** TURKEY BUZZARD.— Boca Chica and Big Pine Keys. Abundant in the sky about Key West most of our stay, frequently very high.

20. **Buteo lineatus alleni.** FOWL HAWK.— First observed in a cocoanut grove on Boca Chica Key. Possibly they may nest there. Also found on Big Pine and Grassy Keys.

21. **Pandion haliaëtus carolinensis.** FISH HAWK.— Several seen about the Marquesas where one was chased into a tree by a Kingbird. A nest was seen on Snipe Key, which was reported to have been there about fifteen years. Cudjoe's Key.

22. **Crotophaga ani.** ANI.— About the lagoon on Key West Mr. S. Brown and myself saw a bird which we believed to be this species. It resembled the grackle somewhat though the tail was longer. The color and flight were apparently similar. Its cry was most peculiar and may perhaps best be described as a whining whistle. I also saw another of these birds which answered the cry of the one we were observing, and the next day both were found about the bushes in the same locality.

23. **Coccyzus minor.** RAIN CROW.— Key West, Boca Grande, Boca Chica, Sugar Loaf, Big Pine, Grassy and Snipe Keys. Their cry is a clucking similar to that of *C. americanus*. They occur usually solitary or in pairs in the mangroves and are tame.

24. **Centurus carolinus.** WOODPECKER.— Boca Chica, Big Pine, Knight and Grassy Keys.

25. **Chordeiles virginianus.** BULL BAT.— One seen on Knight Key.

26. **Corvus brachyrhynchos pascuus.** CROW.— Two seen on Big Pine Key about a pool well inland. Their cry resembles that of *C. brachyrhynchos*.

27. **Tyrannus dominicensis.** BEE BIRD; FIGHTER.— Marquesas, Boca Grande, Boca Chica, Sugar Loaf, Big Pine, Grassy and Snipe Keys.

28. **Agelaius phœniceus bryanti.** BLACK BIRD.— Boca Grande, Ballast, Boca Chica, Sugar Loaf, Big Pine, No Name, Vaca, Summerland, Cudjoe's and Marquesas Keys. The note of this bird is noticeably different from that of *A. phœniceus*, or mostly more metallic. They are shy and prefer the concealment of bushes.

29. **Quiscalus quiscula aglæus.** BLACK BIRD.— Small flocks were seen at different points on the island of Key West. Their note is apparently a little different from that of *Q. quiscula*. Mr. S. Brown saw a small flock on Big Pine Key, also several nests in the slender buttonwoods. They were made of sticks and placed about ten feet from the ground.

I saw similar nests about a pool on Summerland Key. These birds were very abundant on the island off the north shore of Vaca Key. They were tame and many young were heard continually. Others were observed on No Name, Vaca, Grassy, Bahia Honda, Little and Big Pine and Sugar Loaf Keys.

30. **Quiscalus major.** BLACK BIRD.—Several brown birds, apparently this species, were seen on Summerland Key.

31. **Cardinalis cardinalis floridanus.** RED BIRD; RED ORIOLE. Marquesas, Boca Chica, Big Pine, No Name, Knight, Vaca, Grassy, Little Pine, Summerland, Cudjoe's and Snipe Keys. The familiar whistle of this bird was heard in most every place we visited though only occasionally could one catch a glimpse of the bird.

32. **Vireo noveboracensis maynardi.** SPARROW.— Boca Chica, Sugar Loaf, Big Pine, No Name, Knight, Grassy, Summerland and Cudjoe's Keys. Abundant and frequently in the mangroves.

33. **Mimus polyglottos.** MOCKER; MOCKING BIRD.— Key West, Boca Chica, Summerland and Cudjoe's Keys.

Academy of Natural Sciences of Philadelphia.

A-BIRDING IN AN AUTO.

BY MILTON S. RAY.

THAT faithful friend, the horse, was forsaken this year (1905) for that modern, rapid but rather uncertain conveyance, the automobile. To be technical, our machine was a sixteen-horse-power double opposed cylinder Wayne touring car. The tonneau was replaced by a large locker which held sufficient supplies to sustain us almost indefinitely, should we leave the land of the storekeeper. The original plan was to enter the San Joaquin Valley from the west, via Dublin Pass and Livermore, but the early May rains willed it otherwise; so we embarked on a river boat, at a city pier, which took us as far as Stockton. The latter town lies at the mouth of this great level valley, which presents a very even type of country throughout its length. The central portion, for the most part, consists of either marshy waste or alkali-desert land, often as wide as thirty miles or more, and which is practically

treeless except along the river banks. The portion which surrounds this and lies adjacent to the foothills takes in nearly all the settled and cultivated districts and can boast of some fine oak and other timber.

May 10.— To Merced (and 10 miles beyond), 75 miles. Species and subspecies observed, 30.

Knowing (or at least hoping) our tour would be an extended one, we decided to list the species of birds found on the trip. Daylight broke a few miles from Stockton and as the river boat steamed up the slough, fourteen forms were counted, including the Western Martin, which we found in the town proper. In the time it usually took to harness the horses our motor-vehicle had carried us far outside the town limits. It was very pleasant travelling, for so swiftly and noiselessly did we glide along that the whole landscape, like a moving picture on a curtain, seemed rushing toward us. The recent rains had left but little trace on the well packed roads and with the exception of a hard pull through the famous sand bed near Livingston, which has caused many a chauffeur to borrow a team of horses, we had little to complain of. We called it a day's run to a point ten miles west of Merced, where, in a pleasant grove of trees along an irrigation ditch, we encamped for the night. Immense flocks of various blackbirds and finches were swinging over the miles of pasture lands, head-high with the rank growth of wild hay, weeds and mustard. A Black Phœbe had the honor of being the owner of the first nest we officially inspected. It was placed underneath a bridge over the ditch and was waiting for eggs.

May 11.— To Firebaugh, 58 miles. Additional species observed, 11.

Instead of continuing southward we decided to cross the valley to Los Baños, situated about thirty miles due west, across a broad stretch of marshy waste-land; as it promised to greatly increase the list with its wealth of water bird life, we did not heed the repeated warnings regarding the bad condition of the road. While for the first few miles the road was all that could be desired, it then so gradually and continuously passed from bad to worse that we were only deterred from turning back by the memory of the part we had passed. Sloughs crossed the road at will, and in the endless succession of hollows, ponds with sticky mud bottoms

usurped the road-bed. The region is locally known as the "hog-wallow" country and it certainly deserves its name. Water birds were unusually numerous. Black-necked Stilts were as abundant as fowls about a barnyard, and we were also favored with the occasional presence of the delicately colored and graceful American Avocet, while the hovering flocks of Forster and Black Terns above the tule patches reminded one of their great Sierran summer haunts. Immense bands of American White Pelicans, countless Cinnamon Teal, as well as other less abundant varieties, gave the region, otherwise peculiarly uninviting, a deep interest for the ornithologist. But repeatedly to lay on our back on a muddy road beneath a conglomeration of machinery to repair or adjust some injury, did much to draw our attention from the bird life. The road improved as we approached Los Baños, and we hoped for better times to Dos Palos, but this section eclipsed all that we had traversed. A dozen times we came to a complete stop, for to continue through the ponds, sloughs, and deep hollows of what only in extreme courtesy could be called a road, seemed impossible. Covered with mud we finally emerged from the swamp and entered the old Mexican town above named. Two miles further on, at Colony Center, the country changed from worst to best. Smooth roads, lined with tall shade trees, led by prosperous farms with their fields of grain, orchards and dairy lands. Numerous bird forms flitted about, while from many a swaying roadside bough the Bullock Oriole had hung its dainty basket of horsehair. A pretty ride into Firebaugh was marred only by storm clouds which soon overcast the sky, and we were forced by heavy rain to halt at this town, which stands on the west bank of the San Joaquin River.

May 12.— To Kings River, 76 miles. Additional species, 10.

An almost steady downpour continued last night, causing the roads to be so slippery that we deemed it inadvisable to continue until noon. Several hours were spent overhauling our gasoline wagon, and later we rambled over the broad willow-covered flat which banks the river on both sides. Never have I seen any locality equal this for the abundance of the House Finch, which was nesting everywhere. Many Bullock Orioles were building in the oaks and willows, a Western Tree Swallow's nest disclosed two

eggs and one newly-hatched young, while the well-feathered family of a Red-shafted Flicker was occupying a cavity in a tall dead stump. In exploring this the writer seriously cut his hand with a camp ax, which closed operations for the day. At noon we were on the road again, covering the thirty odd miles which lie between Firebaugh and Madera. This stretch of alkali waste-land is less swampy than the region crossed to the north, and water birds were correspondingly less numerous. Owing to the fact that we travelled with greater speed and less noise than by the usual method, we found we could approach much nearer animal life along the road. Turkey Vultures that we often came upon while they were feeding would scarcely fly when we passed them, and on several occasions we sped by a Swainson Hawk or some equally large bird sitting on a fence-post. Near Madera we came upon a Mexican Horned Lark feeding a juvenile in the center of the road. The parent took flight, but before we could stop, the youngster passed from sight beneath us but was luckily unhurt. This is the earliest date we know of for fully-fledged young.

As we approached Madera the fertile country appealed strongly to us, after crossing the broad stretch of alkali country. In an orchard near town our list was increased by the appearance of that flexible-throated songster, the Western Mockingbird. Between Madera and Fresno the country becomes very dry and barren, but from the latter place southward lies the richest portion of the whole valley. Dusk found us camping in the shade of some mighty oaks on the Kings River, two miles south of Kingsbury. To the east, where this river has its source, the Sierras form a continuous wall and reach their highest point in Mount Whitney. The long line of towering peaks in their snowy grandeur recalled the sparkling torrents, crystal lakes, and vast forests of these great mountains, with a bird life possessing for the student a fascination which no other region quite equals.

May 13.— To Visalia, 17½ miles. Additional species, 7.

Before leaving Kings River to-day I had some opportunity to observe the birds about the camp. A pair of Long-tailed Chats, by their noisy chatter and earnest call-notes, proclaimed too prominent an interest in a clump of low bushes where the just completed

nest proved to be. A puzzling find was placed in a niche of a tree, built warbler-style and feather-lined, but there was no sign of ownership. Nearby a Heermann Song Sparrow's nest showed eggs and a Spurred Towhee's contained young.

Continuing southward we passed Goshen Junction, and thence eastward through Visalia. We little thought as we went bounding out of the latter town that we were destined to spend a full week within its borders. Yet, such is automobiling, for when two miles out, a piece of the machinery, no doubt previously strained in the swamp country, gave way and left us stranded at the roadside. After being towed back to town, and telegraphing East for a duplicate part, we comfortably settled our camp in the leafy shades of a large orchard and endeavored to convince ourselves that this was the very place we had been looking for.

May 14 to 21.— Visalia. Additional species, 8.

Visalia lies in an open forest of oaks through which glides the broad St. Johns River, besides a host of minor streams. While the banks of the river and some of the streams were heavily wooded, others were only fringed with a low growth of willows overhung with blackberry vines. As would be expected in such a fertile country as this, edging the foothills, we found bird life abundant. Nearly all the species seen on the trip were again encountered and many new ones. Almost everywhere the air rang with bird song, and the longer we remained the less we regretted our enforced stay. One species which interested us particularly,— not on account of its rarity, for it was very abundant, but for the reason that our previous acquaintance with it had been very slight, — was the Western Blue Grosbeak. To me this bird seems a strange combination of un-grosbeaklike characteristics. The male and female are not greatly unlike a pair of Bluebirds in size, coloration and flight; while the nest, and also the eggs, closely resemble those of the Lazuli Bunting. The nest, placed in weed thickets, neatly fastened to the stalks, from two and a half to four feet up, is compactly made of grasses and weed stems and lined with horse hair, the nest cavity averaging three inches wide by one and three quarters deep. At seven o'clock one morning I noticed a pair which were carrying the initial stems to a weed clump along Mill Creek, so I was able to determine just how

long it took to build a nest. This one was finished with a thick lining of horsehair at half past five in the afternoon of the following day. Another nest was found only a few feet from the main tracks of the Santa Fé Railroad over which the overland trains were tearing by day and night, while a third was in a thicket of nettles, a rather clever barricade. The bird is a late breeder, as all nests examined contained either the full complement of three eggs in a fresh state, or incomplete sets, while there were empty nests in various stages of construction.

My favorite grounds were in the cool shades along the St. Johns River, for the thermometer has an awkward habit here of running up as high as 114° F. on summer days which we found very destructive to ambition. One morning, by the river, I was agreeably surprised to see, eyeing me over the edge of a twig structure about forty feet up in an oak, a majestic female Western Red-tailed Hawk. The tree was peculiarly hard to ascend, and the nest was placed in the most inaccessible part. On the following day I returned with my brother, who after some deliberation started up the trunk. The hawk refused to stir, however, until he was less than twenty feet distant. While I was meditating on the probable style of the egg markings I was rudely awakened by an exclamation of disgust as my brother announced that the nest was empty, which was wholly unexpected considering the late date.

During our visit I located many bird homes but all belonged to the more common species; half a dozen warbler abodes containing eggs in various stages proved to be those of *Dendroica æstiva brewsteri.*

May 22.— To Bakersfield, 93 miles. Additional species, 2.

The trip to-day was of little importance, ornithologically or otherwise. After leaving the orange groves of Porterville, which lies twenty-nine miles southeast of Visalia, the country became more and more barren. At Famoso we entered a desert, sparsely covered with a low growth of shrubs, which extended unbroken to the mountain ranges in the hazy distance. Horned Toads and Horned Larks were the only inhabitants to present themselves, and after a run of twenty miles Bakersfield, like an oasis, loomed up in the distance. The great Kern River, which courses through

the town from east to west, brings a fertility to the section which has been greatly enhanced by man.

May 23.—To Gorman Station, 60 miles. Additional species, 2.

We started at exactly noon to-day by the town clock; soon after the habitations on the outskirts faded away and we again went forth into the desert country. A large curious racing lizard (*Crotaphytus wislizeni*) that scampered along with us at an amazing speed was very common. As we sped along myriads of grasshoppers took wing, flying just about high enough to be scooped into the moving car. Hundreds lit on the radiator, which was intensely hot from the heat above as well as below, and perished. Horned Larks remained our only bird friends, but they made up in abundance for what the avifauna lacked in variety. After leaving Rose Station we began the ascent of the great range of mountains which rose before us on the south. Owing to the absence of sign-boards and the lack of information imparted by the way-house keepers, who looked askance at a steed which required neither a barn nor hay, we made a mistake, and instead of taking the newly built road, we took an old one leading up the cañon. This was more direct but very steep in places, to ascend which it was necessary to do what is termed 'jumping.' The engine is run at the highest speed and the power quickly thrown in, which causes the car to bolt ahead. In this way, by degrees, we went up until suddenly the machine, unable to proceed with the load, started down the grade, and before the brakes could be applied, veered to the side of the narrow road and hovered on the brink of the precipice. I can still see that little stream curling along perhaps a thousand feet below and nothing between but space. Through sheer luck we were able, at the critical point, to turn the automobile in on the road, the wheels just rolling along the edge of the cliff. But the experience of that awful moment taught us a lesson never to be forgotten. After stripping the car of its burden, which we carried to the top of the grade, and reloading, we proceeded on our way.

The Fort Tejon country, a famous landmark in the early ornithological history of California, was perhaps the most interesting on the trip; here the cool green meadows and mountain timber, with the attendant bird life, were in striking contrast with the arid

valley lands we had passed. Such birds as the Lawrence Goldfinch and Southern White-headed Woodpecker were typical of the region, although lower zone species, as the Bullock Oriole and the House Finch, were also in evidence. About dusk we made the summit (elevation 4433 feet), and a little later pulled up at Gorman Station (elevation 3500 feet).

May 24.— To Los Angeles, 117 miles. Additional species, 6.

A large part of to-day's run was over a broad rolling plateau, timbered in spots and interspersed with ponds and an occasional lake, many of which, owing to the exceptional rainfall of the past season, existed for the first time in years. Various water birds sported on the surface of most of them. Several coyotes lying in the sun by the road were rudely awakened and headed with all speed for the timber, while the number of American Ravens seen soon dispossessed us of the idea that the bird is to be considered at all rare in the region. One stretch of country between Meenach (elevation 3039 feet) and Fairmount, known as Antelope Valley, with its heavy growth of tree yuccas (*Yucca arborescens*) and Spanish daggers (*Hesperoyucca whipplei*) had a truly semitropical appearance. Near Elizabeth Lake (elevation 3700 feet), along an unused road, I found, with parent incubating, five eggs of the Pasadena Thrasher. Four proved to be well advanced in incubation while the fifth egg, which was perfectly fresh, was clawed by the bird in leaving, the shell being very fragile, as seems usual with these 'extra' eggs. The manner of nesting in this case was in nowise different from that of the bird of our more northern woods.

At the head of a narrow brushy cañon known as the San Francisquite, we started down the final grade. Some person with a fascination for figures has said that the stream is crossed fifty-three times on the way, and personally I believe the count is not far from accurate. We observed a number of White-throated Swifts flying about the tall rocky cliffs which tower above the road, and which undoubtedly afforded them nesting sites. Civilization and lower-zone bird life marked the ride from Saugus, at the foot of the grade, to Los Angeles, which was reached in time to get conveniently located.

May 25 to *31.*— Los Angeles and vicinity. Additional species, 9.

During our stay we made runs to many of the nearby towns, as Long Beach, San Pedro, Santa Monica, Pasadena, etc., but found but little new in the bird line. On the whole I do not consider the sections we visited blessed with anything like the abundance and variety of bird life we have in similar localities about San Francisco, and the timber for the most part, after leaving the Tehachapi Mountains, was of a very scrubby character. We found a new bird friend in the Hooded Oriole, which was abundant about the parks of Los Angeles as well as in the adjacent territory. A very pleasant call was made on Mr. Joseph Grinnell at Pasadena, where "birdology" was reviewed for some time. I found our friend Grinnell with a strong leaning towards mammalogy, and his collection, particularly of the smaller species, is about the finest I have ever seen. The rest of the afternoon was put in with ostriches at the Cawston Farm. As I viewed these massive creatures, a number of which were setting on broad complements of those almost cast iron eggs, it occurred to me that such birds as these in our native wilds would work a terrible hardship on ornithologists and oölogists alike, looking for a series.

June 1.— To San Buenaventura, 77 miles. Additional species, 1.

Our journey to-day, for the most part, led us through a mountainous country, the major portion of which was but sparsely wooded. Coming down from Calabassas we encountered a large flock of Turkey Vultures feeding at the roadside, but as these had been of common occurrence on the trip they excited no more than ordinary interest. As we drew nearer, however, we found a much larger bird among them which we immediately recognized as the "king of the fliers," the great California Condor. This particular individual was as languid in taking flight as the smaller birds of the flock and afforded us, on foot and wing, an exceptional view for some time.

A succession of up and down grades finally brought us to San Buenaventura where the night was spent. This was the last point where we found the Hooded Oriole and Western Mockingbird, although they may perhaps occur further north.

June 2.— To Santa Barbara, 31 miles. Additional species, 1.

The river bridge was down at San Buenaventura but after some

manœuvring we succeeded in making the crossing. The road leads up from the river over a thickly wooded ridge where we found the Phainopepla very common. Four eggs of the Anthony Towhee, which had the appearance of advanced incubation, were also noticed in a nest a few feet up among clinging vines on a tree trunk. Santa Barbara was reached at 4.45 P. M., we having been three and a half hours on the way.

June 3.— To Santa Maria, 85 miles. Additional species, 1..

To-day's route took us along the coast as far as Gaviota, and in this district we noted the Roadrunner as by no means uncommon. At Gaviota we struck inland, through a winding pass of the same name, into the Santa Ynez and Los Olivos country. The region is very fertile and heavily oaked, and such birds as the Desert Sparrow Hawk, California Jay, Red-shafted Flicker, California Woodpecker, Western Bluebird, Black-headed Groskeak, and others which frequent these woods, were found in abundance. For a second time, near Los Olivos, the California Condor was seen, which inclines one to the belief that the bird is really more common than is supposed. As before, the bird was among a flock of the smaller species. The day's run was ended at Santa Maria.

June 4.— To San Luis Obispo, 28 miles. Additional species, 1.

Troubles with the carbureter caused a late start and frequent stops on the trip to-day. We ran out of the rolling country at Arroyo Grande and thence westward to the seaside resort of Pismo. The road skirts the broad level beach and then carried us along high rocky cliffs, while below us there lay as a poet[1] has said,

> Stretching out in endless line like regiments of war,
> The snow-plumed waves in rank and file were charging on the shore
> With a thunderous roar and echo deep as cannon in the fray,
> While rose along the fighting line the battlecloud of spray.

But before long a damp chilling fog enveloped us and we, glad to leave scenery and sentiment, headed with all speed along the road which, leading in a northeasterly direction, brought us into San Luis Obispo.

[1] Y. S. Notlim.

June 5.— To the First Crossing of the San Antonio River, 55 miles. Additional species, 1.

A short distance out of San Luis Obispo a summit of some height is reached and the country becomes heavily wooded, principally with oaks, and supports an abundant bird life, the California Thrasher being among the most numerous species. At San Miguel we had intended to take a road to the east via Indian Valley, a detour of thirty miles or more, in order to evade the sandy tracts along the Salinas River, but we were inveigled by a resident of the town to take a much shorter route to the west on which, he informed us, but one small stream was to be crossed. Alas! we had unknowingly placed our faith in that arch enemy of the motorist, the stable-keeper. A really fine road led us away from the town and we bowled along merrily for a dozen miles or so until, after a sudden descent, we were dumped, almost before we knew it, in the broad sand beds of the Nacimiento River. Being rather quick-sandy, the machine, from its weight, sank to the hubs, and even with the entire load off we were unable to extricate it. Luckily a camping party with a pair of horses came to our aid, and after considerable preliminary work we reached the opposite bank. We had proceeded but a few miles when we were both surprised and disgusted to come to the banks of another bridgeless river, more formidable to ford than the last. Every effort was made to shoot the empty auto across with a flying start but it proved a failure and stuck in the sandy river bottom. We awaited the campers, who were following, and who again delivered us, after which a general camp was made on the west bank for the night. Words failed, however, to express our amazement when they informed us that the San Antonio required to be crossed twice more, and the possibilities of a serious breakdown in this almost uninhabited country made these troublesome tidings hang like a cloud of gloom over the evening camp-fire.

June 6.— To Salinas, 93 miles. Additional species, 1.

Together with the campers, we set forth at daybreak this morning, determined to put the river crossings on the right side of us at the earliest possible moment. The appearance of the third ford was by no means cheering; the water, several feet in depth, did not deter us, but the sand was very soft and deep. Our friends

preceded us and, to cap the climax, one of their horses became balky in mid-stream, leaving us all in a rather serious predicament. One of the party rode bareback to Pleyto, the nearest town, where a plow-team was engaged, with the aid of which our various vehicles reached the opposite shore in safety. During the interim I took advantage of the occasion to reconnoiter along the river banks. Besides the recurrent species I noticed a new bird in the Rock Wren, which was rather numerous. The last crossing of the San Antonio, at Pleyto, was easily made on the run, and without a barrier before us we proceeded to make up for lost time. Becoming short of lubricating oil we were fortunately able to obtain some from an 'up-to-date' farmer who possessed a gasoline engine. Jolon, about the highest point, was reached, and some miles further on a sharp descent was made into the broad, wind-swept Salinas Valley. A sand-storm of a nature that made travelling almost impossible, continued until we passed Soledad. These twenty miles through an exceptionally barren country were the most dismal on the trip, scarcely any life being visible. From Soledad, cold moist fog replaced the sand and, wrapped in blankets, we sped into Salinas.

June 7.— To Pacific Grove, 20 miles. Additional species, 1.

What was intended to be a short side trip, but which proved to be a long one, was taken this morning. The spin to Pacific Grove, which lies on the southern end of Monterey Bay, was only a matter of an hour or so, but when we arrived at the very door of the bungalow we were to occupy the transmission shaft, probably weakened in river fording, broke, and with a repetition of our Visalia experience at hand I complacently reserved sufficient pages in my note book for a week's observations on Pacific Grove bird-ways.

June 8 to *15.*— Pacific Grove. Additional species, 19.

The 'Grove,' as the town is commonly called, is prettily hid away among an extensive and dense growth of patriarchal pines, on a peninsula which juts into the sea. Salmon fishing, when the weather allowed, was indulged in and frequent rambles were made to all points of the compass. The extremely foggy weather, which at the Grove obscures the sun for days, imparts a gloomy, solemn aspect to the pine woods, the dampest and mossiest wood-land I know of, but notwithstanding the unpropitious weather

conditions the locality is rich in cheery bird life. Most in evidence were the Coast Jay, Santa Cruz Chickadee, California Bushtit, Point Pinos Junco, and the Russet-backed Thrush, while many other species occurred in less numbers. Along the Carmel River, less than a dozen miles south, where the pines were wholly absent, we found most of the above species lacking, and in place of them were the lower-zone birds, such as we had met with during the greater part of our coastal journey. A local list for the week gave us forty-three species.

June 16.— To Salinas, 20 miles. Additional species, 0.

Our belated casting arrived this morning and after installing it we had sufficient time to make Salinas.

June 17.— To San Francisco, 126 miles. Additional species, 0.

The closing run of the trip was through a country with which I was previously familiar but the life zones being the same as in regions already traversed, we failed to add any new species to the list. San Francisco was entered about dusk and the pioneer ornithological expedition propelled by power came to an end.

List of Species Observed.

It is surprizing that on a trip of over eleven hundred miles we did not meet with such common birds as *Empidonax difficilis*, *Nuttallornis borealis*, and various others. As this list pertains exclusively to this trip, only the species actually observed on it are included.

1. **Cepphus columba**. PIGEON GUILLEMOT.— One seen while salmon fishing in Monterey Bay.
2. **Uria californica**. CALIFORNIA MURRE.— Several seen at Monterey and Pacific Grove.
3. **Larus occidentalis**. WESTERN GULL.— Seen at various points along the coast from Monterey southward.
4. **Larus heermanni**. HEERMANN GULL.— Common along the coast, — at Long Beach, Gaviota, Pacific Grove, etc.
5. **Sterna forsteri**. FORSTER TERN.— Abundant in the vicinity of Los Baños and Firebaugh.
6. **Hydrochelidon surinamensis**. BLACK TERN.— Common in the vicinity of Los Baños.
7. **Phalacrocorax penicillatus**. BRANDT CORMORANT.

8. **Phalacrocorax pelagicus resplendens.** BAIRD CORMORANT.— Both noted on Monterey Bay.

9. **Pelecanus erythrorhynchos.** AMERICAN WHITE PELICAN.— Immense flocks noted near Los Baños and Firebaugh; also seen near Gorman Station.

10. **Pelecanus californicus.** CALIFORNIA BROWN PELICAN.— A number seen at Long Beach.

11. **Querquedula cyanoptera.** CINNAMON TEAL.— Common about Los Baños and Firebaugh.

12. **Dafila acuta.** PINTAIL DUCK.— Several seen south of Los Baños.

13. **Plegadis guarauna.** WHITE-FACED GLOSSY IBIS.— A large band of ibises, seen near Gorman Station, supposed to be this species.

14. **Ardea herodias herodias.** GREAT BLUE HERON.— Found abundantly in the San Joaquin Valley in suitable localities from Stockton to Porterville.

15. **Butorides virescens anthonyi.** ANTHONY GREEN HERON.— Noted near Stockton, and common along the streams about Visalia.

16. **Gallinula galeata.** FLORIDA GALLINULE.— Found east of Firebaugh.

17. **Fulica americana.** AMERICAN COOT.— Noted near Merced, Firebaugh, and Gorman Station.

18. **Steganopus tricolor.** WILSON PHALAROPE.— Los Baños.

19. **Recurvirostra americana.** AMERICAN AVOCET.— Los Baños.

20. **Himantopus mexicanus.** BLACK-NECKED STILT.— Very common about Los Baños and Firebaugh.

21. **Actitis macularia.** SPOTTED SANDPIPER.— Found along the streams at Visalia and also near Porterville.

22. **Ægialitis vocifera.** KILLDEER.— Met with off and on from Merced to Porterville, and also at Gorman Station and at several points on the coast.

23. **Lophortyx californicus californicus.** CALIFORNIA PARTRIDGE. This coast form we found scarce except about Monterey.

24. **Lophortyx californicus vallicolus.** VALLEY PARTRIDGE.— Where the road leading down the San Joaquin Valley edged along the foothills, we found this bird common, as at Kingsbury, Visalia, and Porterville; also noted it in the mountains at Lebec and Gorman Station.

25. **Zenaidura macroura.** MOURNING DOVE.— A common bird throughout almost the entire trip.

26. **Gymnogyps californianus.** CALIFORNIA VULTURE.— Two records, Calabassas and Los Olivos.

27. **Cathartes aura.** TURKEY VULTURE.— Common along practically the entire route.

28. **Circus hudsonius.** MARSH HAWK.— Seen at several points in the San Joaquin Valley,— Stockton, Merced, etc.

29. **Accipiter cooperi.** COOPER'S HAWK.— Noted at several points between Stockton and Madera.

30. **Buteo borealis calurus.** WESTERN RED-TAILED HAWK.— Seen at various points,— Porterville, Lebec, Gorman Station, Pacific Grove, etc., and found nesting at Visalia.

31. **Buteo swainsoni.** SWAINSON HAWK.— Merced and Firebaugh.

32. **Falco sparverius phalœna.** DESERT SPARROW HAWK.— Common in most places along the entire trip but particularly so in the dense oak woods about Los Olivos, Paso Robles, and Pleyto.

33. **Megascops asio bendirei.** CALIFORNIA SCREECH OWL.— Visalia.

34. **Speotyto cunicularia hypogæa.** BURROWING OWL.— Observed in San Joaquin Valley and found abundant in a rocky barren tract some miles south of San Jose.

35. **Geococcyx californianus.** ROADRUNNER.— Naples to Gaviota.

36. **Ceryle alcyon.** BELTED KINGFISHER.— Only two records of this common bird — Kingsbury and Carmel River.

37. **Dryobates villosus hyloscopus.** CABANIS WOODPECKER.— San Buenaventura and Pacific Grove.

38. **Dryobates pubescens turati.** WILLOW WOODPECKER.— Monterey.

39. **Xenopicus gravirostris.** SOUTHERN WHITE-HEADED WOODPECKER.— Between Fort Tejon and Lebec we saw at close range three individuals, although Mr. Joseph Grinnell, in his list of the birds of Fort Tejon (Condor, Vol. VII, p. 13), evidently failed to find them. While we took no skins it is probable the birds from this locality will be found to be this variety, with the larger bill.

40. **Melanerpes formicivorus bairdi.** CALIFORNIA WOODPECKER.— Noted at Kingsbury, Visalia, and Porterville in the San Joaquin Valley and coastwise, especially between Gaviota and Los Olivos where it was very abundant.

41. **Colaptes cafer collaris.** RED-SHAFTED FLICKER.— Where there was any timber in the San Joaquin Valley we found this bird, and likewise on the rest of the journey. A nest with almost full-fledged young was noted at Firebaugh.

42. **Chordeiles virginianus hesperis.** PACIFIC NIGHTHAWK.— A single bird seen near Merced.

43. **Aëronautes melanoleucus.** WHITE-THROATED SWIFT.— San Francisquite Cañon above Saugus.

44. **Calypte anna.** ANNA HUMMINGBIRD.— Visalia, Porterville, Pacific Grove, etc.

45. **Selasphorus alleni.** ALLEN HUMMINGBIRD.— Monterey.

46. **Tyrannus verticalis.** ARKANSAS KINGBIRD.— Excepting in the deserts and marshes this was the commonest bird in the San Joaquin Valley but scarce coastwise. A nest with three large young observed at Visalia.

47. **Myiarchus cinerascens cinerascens.** ASH-THROATED FLYCATCH-

ER.— Noted at Firebaugh, Visalia, Porterville, Lebec, and Gorman Station. It also occurs coastwise, but we did not find it on this trip.

48. **Sayornis nigricans.** BLACK PHŒBE.— Common throughout most of the trip. Nearly every bridge had its pair of these birds, and about Visalia I noticed about half a dozen nests with eggs placed in sluice boxes through which the water coursed uncomfortably close to the mud-made domiciles.

49. **Contopus richardsoni richardsoni.** WESTERN WOOD PEWEE.— Not uncommon in the higher ranges — Lebec and Gorman Station — as well as in timbered districts in the lower valleys — Visalia, Pacific Grove, etc.

50. **Otocoris alpestris actia.** MEXICAN HORNED LARK.— Abundant on the treeless areas of the San Joaquin Valley.

51. **Cyanocitta stelleri carbonacea.** COAST JAY.— Very common about Pacific Grove in the pine woods.

52. **Aphelocoma californica californica.** CALIFORNIA JAY.— Common from Kingsburg to Porterville in the San Joaquin Valley and in most places along the coast.

53. **Aphelocoma californica obscura.** BELDING JAY.— According to a new ruling the bird about Los Angeles (and southward), which we found fairly common, has been separated from our northern species.

54. **Corvus corax sinuatus.** AMERICAN RAVEN.— Found from Gorman Station southeast to Elizabeth Lake.

55. **Corvus brachyrhynchos hesperis.** CALIFORNIA CROW.— Firebaugh and Pacific Grove, not very common.

56. **Xanthocephalus xanthocephalus.** YELLOW-HEADED BLACKBIRD. — Common along the slough near Stockton.

57. **Agelaius phœniceus neutralis.** SAN DIEGO RED-WINGED BLACKBIRD.— Long Beach.

58. **Agelaius gubernator californicus.** BICOLORED BLACKBIRD.

59. **Agelaius tricolor.** TRICOLORED BLACKBIRD. — Both noted at various points from Stockton to Porterville, breeding (eggs and young).

60. **Sturnella neglecta.** WESTERN MEADOWLARK.— Observed commonly and pretty generally throughout the trip in open country except marsh and desert lands.

61. **Icterus cucullatus nelsoni.** ARIZONA HOODED ORIOLE.— Found common in Los Angeles and vicinity and in places as far north as San Buenaventura.

62. **Icterus bullocki.** BULLOCK ORIOLE.— Wherever there were trees in the San Joaquin Valley we found this oriole very abundant but it was scarce along the coast. Found breeding commonly at Firebaugh, Colony Center, Visalia, etc.

63. **Euphagus cyanocephalus.** BREWER BLACKBIRD.— A common bird coastwise but less so inland where it was noted at Merced and Gorman Station.

64. **Carpodacus purpureus californicus.** CALIFORNIA PURPLE FINCH. — Firebaugh and Pacific Grove; not very abundant.

65. **Carpodacus mexicanus frontalis.** HOUSE FINCH.— The commonest bird on the trip; we found it nearly everywhere.

66. **Astragalinus tristis salicamans.** WILLOW GOLDFINCH.— Rather uncommon; found at Kingsburg, Visalia, Porterville, and Pacific Grove.

67. **Astragalinus psaltria hesperophilus.** GREEN-BACKED GOLDFINCH.— More abundant than the preceding species. Found in the wooded sections of the San Joaquin as far as Porterville, and at various points on the coast (Pacific Grove, etc.).

68. **Astragalinus lawrencei.** LAWRENCE GOLDFINCH.— One seen at Bakersfield, very numerous from Fort Tejon to Gorman Station, and less so on the coast between Gaviota and Los Olivas.

69. **Passer domesticus.** EUROPEAN HOUSE SPARROW.— Common about the towns.

70. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW. — Wherever there were oak woods on the trip we were pretty sure to find this a common species.

71. **Zonotrichia leucophrys nuttalli.** NUTTALL SPARROW.— Common at Pacific Grove.

72. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.— Noted at Visalia, Porterville, and Pacific Grove.

73. **Junco hyemalis pinosus.** POINT PINOS JUNCO.— Very common about Pacific Grove in pine woods.

74. **Melospiza cinerea heermanni.** HEERMANN SONG SPARROW.— Along streams in the San Joaquin Valley this song sparrow was a common bird.

75. **Melospiza cinerea santæcrucis.** SANTA CRUZ SONG SPARROW. — Pacific Grove and northward.

76. **Melospiza cinerea cooperi.** SAN DIEGO SONG SPARROW.— Long Beach, San Buenaventura, etc.

77. **Pipilo maculatus megalonyx.** SPURRED TOWHEE.— Found in the San Joaquin at Firebaugh, Kingsburg (breeding), Visalia, and Porterville.

78. **Pipilo maculatus atratus.** SAN DIEGO TOWHEE.— We noticed towhees which would be referable to this form about Los Angeles although its claim to subspecific rank is disputed.[1]

79. **Pipilo maculatus falcifer.** SAN FRANCISCO TOWHEE.— Found at various points from Pacific Grove north.

80. **Pipilo crissalis crissalis.** CALIFORNIA TOWHEE.— Kingsburg, Visalia (breeding), and Porterville in the San Joaquin Valley. Very common along the coast from Pacific Grove north.

81. **Pipilo crissalis senicula.** ANTHONY TOWHEE.— Abundant along the southern coast and as far as we went inland (Pasadena, etc.).

[1]This form is now conceded to be not separable from *megalonyx*. *Cf.* Ridgway, Condor, VIII, No. 4, p. 100, July 15, 1906.— EDD.

82. **Zamelodia melanocephala capitalis.** CALIFORNIA BLACK-HEADED GROSBEAK.— Found pretty generally throughout the trip; common.

83. **Guiraca cærulea lazula.** WESTERN BLUE GROSBEAK.— Common about Visalia (breeding) to Porterville.

84. **Cyanospiza amœna.** LAZULI BUNTING.— Visalia and Porterville.

85. **Progne subis hesperis.** WESTERN MARTIN.— Stockton.

86. **Petrochelidon lunifrons lunifrons.** CLIFF SWALLOW.— Common in suitable places throughout the trip.

87. **Hirundo erythrogastra palineri.** WESTERN BARN SWALLOW. This was most abundant inland while the preceding species was most abundant along the coast.

88. **Iridoprocne bicolor vespertina.** WESTERN TREE SWALLOW.— Firebaugh and Visalia.

89. **Riparia riparia.** BANK SWALLOW.— San Pedro.

90. **Phainopepla nitens.** PHAINOPEPLA.— Above Saugus (San Francisquite Cañon) and San Buenaventura.

91. **Lanius ludovicianus gambeli.** CALIFORNIA SHRIKE.— Common in the San Joaquin Valley but less so along the coast.

92. **Vireo gilvus swainsoni.** WESTERN WARBLING VIREO.— Kingsburg and Visalia.

93. **Dendroica æstiva brewsteri.** CALIFORNIA YELLOW WARBLER.— Abundant in suitable localities throughout the trip; found breeding commonly about Visalia.

94. **Geothlypis trichas arizela.** PACIFIC YELLOWTHROAT.— One record, Visalia.

95. **Icteria virens longicauda.** LONG-TAILED CHAT.— Kingsburg (breeding), Visalia, and Porterville.

96. **Wilsonia pusilla pileolata.** PILEOLATED WARBLER.— Pacific Grove.

97. **Mimus polyglottos leucopterus.** WESTERN MOCKINGBIRD.— Noticed at Madera, and found commonly about Los Angeles but not further north on the coast than San Buenaventura.

98. **Toxostoma redivivum redivivum.** CALIFORNIA THRASHER.— Oresta, Pacific Grove, etc.

99. **Toxostoma redivivum pasadensis.** PASADENA THRASHER.— Elizabeth Lake (breeding).

100. **Salpinctes obsoletus.** ROCK WREN.— Second crossing of the San Antonio River.

101. **Troglodytes ædon parkmani.** PARKMAN WREN.— Monterey.

102. **Sitta pygmæa pygmæa.** PYGMY NUTHATCH.— Pacific Grove.

103. **Bæolophus inornatus inornatus.** PLAIN TITMOUSE.—Nipomo and second crossing of the San Antonio River.

104. **Parus rufescens barlowi.** SANTA CRUZ CHICKADEE.— Pacific Grove, abundant.

105. **Chamæa fasciata henshawi.** PALLID WREN-TIT.—San Francisquite Cañon and Los Angeles (breeding, young).

106. **Chamæa fasciata intermedia** *Grinnell* or **rufula** *Ridgway*. INTERMEDIATE WREN-TIT (or RUDDY WREN-TIT).— Pacific Grove and Monterey.

107. **Psaltriparus minimus minimus**. BUSH-TIT.— Pacific Grove (breeding, young).

108. **Psaltriparus minimus californicus**. SACRAMENTO BUSH-TIT.— Firebaugh (breeding), Visalia.

109. **Hylocichla ustulata ustulata**. RUSSET-BACKED THRUSH.— Visalia and Pacific Grove.

110. **Hylocichla aonalaschkæ slevini**. MONTEREY HERMIT THRUSH. — Pacific Grove.

111. **Sialia mexicana occidentalis**. WESTERN BLUEBIRD.—Porterville, Lebec, Gorman Station, Pacific Grove, etc.

NOTES ON BIRDS OF SILVER CITY, NEW MEXICO.

BY JOHN T. SHARPLESS HUNN.

THE following field notes were recorded within a ten miles radius, taking Silver City as the center. The period of time covered was between the first of September and the sixth of May, during the years 1903–4 and 1904–5. Although I would be absent part of the time in one year, I always managed to be present during this interval in the succeeding year, consequently an observation was made every day within the period.

Silver City, the county seat of Grant County, is situated in a 'draw' at an altitude of about 5,300 feet. It is surrounded by low foothills that were once covered with juniper and scrub oak, but they have long since been denuded by the merciless Mexican woodcutter. Now, the hills lie bare and brown, save here and there for an oasis of 'cholla' cacti or a group of yuccas, and afford scant shelter for bird life. The principal streets of the city are lined with cottonwoods, and many of the residents make a pretence at gardening. This brings some few species into the town, but the scarcity of water and lack of reservoirs keep those that are less confiding at a distance.

Perhaps the most favorable location is at Coleman's Ranch, distant about three miles, which contains the only original timber within eight miles. From Pinos Altos north and just inside the limits of these radii, there is still mile upon mile of pine forest. But this is the nearest heavy timber. Coleman's Ranch has a fenced area of 320 acres, and part of it is thickly wooded with juniper, piñon, scrub oak, and smaller brushwood. The remaining part (and larger half) is mostly open country, but here and there are places well covered with cacti and yuccas. There are two small reservoirs for irrigation purposes, shaded by cottonwoods and about two acres of orchard.

The climatic conditions are very similar to those of other points in the Southwest of equal altitude, cold nights and warm days predominating, somewhat modified in summer by cool nights and hot days. During the two winters mentioned, the thermometer only twice registered so low as seven degrees at Coleman's Ranch. The winter of 1904–5 was unusually mild and wet and was a winter of disastrous floods. The oldest inhabitants had never known a season like it. There was so much water on the plains that birds were not forced to come about the reservoirs as they had been the preceding year, the effect being that species appearing as abundant one year were only casually noted the next winter. Usually the rainfall is very light and almost wholly confined to the summer months.

Before bringing this introduction to a close, I feel I must again thank John E. Coleman and 'Doom' Coleman for their assistance in many instances; not only while I was a guest at their ranch, but as well when hunting with them in the surrounding mountain ranges. They were both untiring in their efforts to help me add new species to my daily check-list.

Following is a list of species recorded:

1. **Mareca americana.** BALDPATE.— One shot on Coleman's Ranch, April 15.

2. **Nettion carolinensis.** GREEN-WINGED TEAL.— Common during winter and spring months.

3. **Querquedula cyanoptera.** CINNAMON TEAL.— A common spring migrant.

4. **Ardea herodias.** GREAT BLUE HERON.— One shot May 1, two seen March 21, Coleman's Ranch.

5. **Oxyechus vociferus.** KILLDEER.— Common, arriving March 20.

6. **Callipepla squamata.** SCALED PARTRIDGE.— Common. Prefering the open country to the timber. Covies of from thirty to ninety birds are not uncommon on the plains below Silver City.

7. **Lophortyx gambelii.** GAMBEL'S PARTRIDGE.— As common as the preceding species both on the plains and in the timber. A covey of about fifty birds regularly wintered in Coleman's pasture and during very cold weather, after a fall of snow, it was not unusual for them to feed near the house with the chickens.

8. **Columba fasciata.** BAND-TAILED PIGEON.— Although an abundant bird in the mountain ranges north of Silver City, I have never seen it within the ten mile radius. However, during the summer of 1904, Mr. Coleman wrote me that the wooded section of his pasture was alive with them. It was some time in August, and they remained several days regardless of the fact that they were repeatedly shot.

9. **Zenaidura macroura.** MOURNING DOVE.—Common everywhere. A few remain throughout the winter in sheltered localities.

10. **Cathartes aura.** TURKEY VULTURE. — Common. Arriving March 25, leaving in October.

11. **Circus hudsonius.** MARSH HAWK.— Not uncommon at Coleman's Ranch, especially during the fall months.

12. **Accipiter velox.** SHARP-SHINNED HAWK.— Common resident.

13. **Accipiter cooperi.** COOPER'S HAWK.— I saw but one specimen which was brought to me from the Diamond Bar Ranch.

14. **Accipiter atricapillus.** AMERICAN GOSHAWK.— Found a dead goshawk in the Mimbres Mountains in midwinter. I saw another specimen in Silver City at a local taxidermist's shop. I was told it had been killed near the town.

15. **Buteo borealis calurus.** WESTERN REDTAIL.— This is the commonest hawk of the country. There is hardly a day when they are not seen soaring over the city and surrounding plains. It breeds regularly on Coleman's Ranch.

16. **Archibuteo ferrugineus.** FERRUGINOUS ROUGH-LEG.— Not uncommon on the plains below Silver City. On January 25, I picked up a dead bird of this species near Coleman's Ranch; again on March 30 I noticed three or four at one time circling over the plain.

17. **Aquila chrysaëtos.** GOLDEN EAGLE.— Occasionally seen near Silver City during the fall, winter, and spring months. Common in the mountains.

18. **Falco richardsoni.** RICHARDSON'S MERLIN.— One specimen killed on Coleman's Ranch and three others seen; all in midwinter.

19. **Falco sparverius phalœna.** DESERT SPARROW HAWK.— A very common resident, although less common in winter.

20. **Strix pratincola.** BARN OWL.— One was shot by J. E. Coleman on September 2. This owl appeared for several nights flying about the house. No others were seen.

21. **Asio wilsonianus.** AMERICAN LONG-EARED OWL.— Five seen on January 18, and one on January 21, on the ranch.

22. **Megascops asio cineraceus.** MEXICAN SCREECH OWL.— Common resident.

23. **Bubo virginianus pallescens.** WESTERN HORNED OWL.— Common resident. One nest that I discovered about two miles north of Silver City contained two downy young. This was on April 20.

24. **Speotyto cunicularia hypogæa.** BURROWING OWL.— Locally common. One colony, about four miles east of Silver City, composed of some three or four owls. Further south on the plain they are quite often seen.

25. **Geococcyx californianus.** ROAD-RUNNER.— Common resident.

26. **Ceryle alcyon.** BELTED KINGFISHER.— A few seen during the spring and fall months. Not common.

27. **Dryobates villosus hyloscopus.** CABANIS'S WOODPECKER.— Rather common on Coleman's Ranch throughout the months recorded.

28. **Dryobates scalaris bairdi.** TEXAN WOODPECKER.— Very common resident.

29. **Sphyrapicus varius nuchalis.** RED-NAPED SAPSUCKER.— Fairly common about Silver City during the winter and spring.

30. **Sphyrapicus thyroideus.** WILLIAMSON'S SAPSUCKER.— Two specimens were taken on Coleman's Ranch March 22. In April of the same year, I noticed this handsome woodpecker in the Mimbres Range at an altitude of 8,000 feet.

31. **Melanerpes formicivorus.** ANT-EATING WOODPECKER.— A common resident from Piños Altos north.

32. **Asyndesmus torquatus.** LEWIS'S WOODPECKER.— This woodpecker is probably locally common throughout Grant County, but I have only noticed it near Pinos Altos, where it is to be found in small flocks.

33. **Colaptes cafer collaris.** RED-SHAFTED FLICKER.— Common resident.

34. **Tyrannus verticalis.** ARKANSAS KINGBIRD.— Common during spring migration after April 12, but rapidly gives place to the following species.

35. **Tyrannus vociferans.** CASSIN'S KINGBIRD.— Arrives a few days later than *verticalis*. A common summer resident, nesting in the town and in the country. Leaves for the south about October 10.

36. **Myiarchus cinerascens.** ASH-THROATED FLYCATCHER.— Arrives about May 6. Collected one specimen on that day, and several others were seen later.

37. **Sayornis saya.** SAY'S PHŒBE.— Common resident, though less common in winter.

38. **Sayornis nigricans.** BLACK PHŒBE.— A migrant during March and April; not common.

39. **Empidonax wrightii.** WRIGHT'S FLYCATCHER.— Arrives about April 15. Common during the remainder of the month. Five seen on May 4.

40. **Pyrocephalus rubineus mexicanus.** VERMILION FLYCATCHER.— Arrives April 15 and frequently seen till April 29. Also noted on September 29.

41. **Otocoris alpestris occidentalis.** Abundant throughout the year.

42. **Cyanocitta stelleri diademata.** LONG-CRESTED JAY.— Common about Pinos Altos.

43. **Aphelocoma woodhouseii.** WOODHOUSE'S JAY.— Very common resident about Silver City.

44. **Aphelocoma sieberii arizonæ.** ARIZONA JAY.— Common resident.

45. **Corvus corax sinuatus.** AMERICAN RAVEN.— Casual.

46. **Corvus cryptoleucus.** WHITE-NECKED RAVEN.— Resident. Sometimes in immense flocks.

47. **Cyanocephalus cyanocephalus.** PIÑON JAY.— Abundant during fall migration in September. A few winter near Pinos Altos.

48. **Molothrus ater.** COWBIRD.— Casual in spring.

49. **Xanthocephalus xanthocephalus.** YELLOW-HEADED BLACKBIRD.— Fairly common during spring and fall migrations. Sometimes common in Silver City streets in winter.

50. **Agelaius phœniceus fortis.** NORTHERN RED-WING.— Common winter visitant in Silver City streets.

51. **Sturnella magna neglecta.** WESTERN MEADOWLARK.— Winters about Silver City in large numbers.

52. **Icterus parisorum.** SCOTT'S ORIOLE.— A specimen was sent to me from Coleman's Ranch in August. It is probably a summer resident.

53. **Icterus cucullatus nelsoni.** ARIZONA HOODED ORIOLE.— Arrives April 13, and was common till I left on May 6.

54. **Icterus bullocki.** BULLOCK'S ORIOLE.— Arrives April 30, common May 6.

55. **Euphagus cyanocephalus.** BREWER'S BLACKBIRD. — Common from September 1 to May 6.

56. **Hesperiphona vespertina montanus.** WESTERN EVENING GROSBEAK.— These birds were first noted on February 18, 1905, when a flock of thirty were seen feeding on maple tree buds in Silver City. From this time on they were in evidence daily, and on March 5 the number was augmented by at least thirty more. This flock of sixty continued with us till March 29, the last date on which they were seen.

57. **Carpodacus mexicanus frontalis.** HOUSE FINCH.— Abundant resident.

58. **Passer domesticus.** HOUSE SPARROW.— By no means a common bird, but as many as five have been seen in Silver City at one time; it is quite certain the sparrow has arrived to stay awhile.

59. **Spinus pinus.** PINE SISKIN.— I have noted the siskin every month in the year except June, July and August; at no time were they common near Silver City.

60. **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR. — Abundant during the winter months on the plains. They leave for the north about April 1.

61. **Poœcetes gramineus confinis.** WESTERN VESPER SPARROW.— A common bird from September 19 to April 30. Probably most of them breed north of here. During severely cold weather they become scarce, but a few, at least, are to be found every winter month.

62. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.— Arrives April 19 and becomes very common by May 6.

63. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW. — An abundant winter visitant, leaving for the north about May 1.

64. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.— Common resident.

65. **Junco hyemalis connectens.** SHUFELDT'S JUNCO.— Abundant winter visitant. Seen as late as April 18.

66. **Junco mearnsi.** PINK-SIDED JUNCO.— An equally abundant winter visitant. Seen as late as April 18.

67. **Junco caniceps.** GRAY-HEADED JUNCO.— Fairly common winter visitant. Seen as late as May 6.

68. **Amphispiza bilineata deserticola.** DESERT SPARROW.— Very common summer resident. A few winter on the cactus-covered plains.

69. **Amphispiza belli nevadensis.** SAGE SPARROW.—Winter visitant. Seen in small numbers between December 28 and March 1.

70. **Melospiza lincolnii.** LINCOLN'S SPARROW.— Migrant about October 23, and between March 11 and April 15.

71. **Pipilo maculatus arcticus.** ARCTIC TOWHEE.—Common winter visitant. Seen as late as April 22.

72. **Pipilo fuscus mesoleucus.** CAÑON TOWHEE.— Abundant resident.

73. **Oreospiza chlorura.** GREEN-TAILED TOWHEE.— Common summer resident from April 12 to October 2.

74. **Zamelodia melanocephala.** BLACK-HEADED GROSBEAK.— Arrives from the south May 6.

75. **Calamospiza melanocorys.** LARK BUNTING. — Common from October 2 to May 6.

76. **Piranga ludoviciana.** LOUISIANA TANAGER. — Arrives about April 30 as a transient.

77. **Progne subis.** PURPLE MARTIN.— Noted martins in Silver City between May 29 and June 18; it is evidently a common summer resident.

78. **Petrochelidon lunifrons.** CLIFF SWALLOW.— Common summer resident, arriving in April.

79. **Hirundo erythrogastra.** BARN SWALLOW.— Common summer resident, arriving April 21.

80. **Tachycineta thalassina lepida.** VIOLET-GREEN SWALLOW.— This lovely swallow reaches Silver City about April 23, and becomes a common migrant by the first of May.

81. **Lanius ludovicianus excubitorides.** WHITE-RUMPED SHRIKE. — Common resident.

82. **Vireo gilvus.** WARBLING VIREO.— Arrives from the south about May 4.

83. **Helminthophila virginæ.** VIRGINIA'S WARBLER.— As a migrant, it is common between April 19 and April 29 on Coleman's Ranch.

84. **Helminthophila celata.** ORANGE-CROWNED WARBLER.— A common migrant between April 18 and May 6.

85. **Dendroica æstiva sonorana.** SONORA YELLOW WARBLER.— Common after April 30.

86. **Dendroica auduboni.** AUDUBON'S WARBLER.— Abundant as a migrant from April 17 to May 6.

87. **Dendroica nigrescens.** BLACK-THROATED GRAY WARBLER.— Common migrant April 18 to May 6.

88. **Sieurus noveboracensis notabilis.** GRINNELL'S WATER-THRUSH. — Two specimens recorded from Coleman's Ranch on May 6, 1904.

89. **Geothlypis trichas occidentalis.** WESTERN YELLOW-THROAT.— A common migrant from April 13 to May 6.

90. **Wilsonia pusilla pileolata.** PILEOLATED WARBLER.— Abundant as a migrant from April 16 to May 6.

91. **Oroscoptes montanus.** SAGE THRASHER.— Rather common as a migrant during April; some remain throughout the winter months.

92. **Mimus polyglottos leucopterus.** WESTERN MOCKINGBIRD.— Very common summer resident.

93. **Toxostoma curvirostre.** CURVED-BILLED THRASHER.— An abundant summer resident; a few winter on the plains.

94. **Heleodytes brunneicapillus couesi.** CACTUS WREN.— Common resident, though less common in winter.

95. **Salpinctes obsoletus.** ROCK WREN.— Resident. Nesting in rock crevices near the Silver City railway station.

96. **Catherpes mexicanus conspersus.** CAÑON WREN.— The Cañon Wren visits Silver City in midwinter and is heard singing from the housetops. However, it is not common south of the Pinos Altos country.

97. **Thryomanes bewickii leucogaster.** BAIRD'S WREN.— I have shot this wren on Coleman's Ranch in January and in May, so I presume they are resident; they are at no time common.

98. **Troglodytes ædon aztecus.** WESTERN HOUSE WREN.— Arrives about April 28 and becomes quite common by May 6.

99. **Certhia familiaris montana.** ROCKY MOUNTAIN CREEPER.— Casually met with in the Pinos Altos country.

100. **Sitta carolinensis aculeata.** SLENDER-BILLED NUTHATCH.— Abundant from Pinos Altos north. Casual on Coleman's Ranch.

101. **Sitta pygmæa.** PYGMY NUTHATCH.— Abundant at Pinos Altos but I have never seen them at Coleman's Ranch.

102. **Bæolophus inornatus griseus.** GRAY TITMOUSE.— Common resident.

103. **Bæolophus wollweberi.** BRIDLED TITMOUSE.— Rather rare; only found north of Pinos Altos.

104. **Parus gambeli.** MOUNTAIN CHICKADEE.— Casual at Coleman's Ranch; abundant near Pinos Altos.

105. **Psaltriparus plumbeus.** LEAD-COLORED BUSH-TIT.— Abundant about Silver City during fall, winter, and spring.

106. **Regulus calendula.** RUBY-CROWNED KINGLET.— Abundant migrant and common winter visitant throughout the country.

107. **Polioptila cærulea obscura.** WESTERN GNATCATCHER.—Casual on Coleman's Ranch in April and May.

108. **Myadestes townsendii.** TOWNSEND'S SOLITAIRE.— Rather rare in the Pinos Altos country.

109. **Hylocichla guttata auduboni.** AUDUBON'S HERMIT THRUSH.— Arriving from the south about May 6.

110. **Merula migratoria propinqua.** WESTERN ROBIN.—Common as a migrant during March and April. The Western Robin breeds abundantly in the mountains north of Pinos Altos.

111. **Sialia mexicana bairdi.** CHESTNUT-BACKED BLUEBIRD.— Very common migrant and winter resident, October 1 to April 10.

112. **Sialia arctica.** MOUNTAIN BLUEBIRD.— Common resident.

CONCERNING THE THICK-BILLED PARROT.

BY W. H. BERGTOLD.

THE writer spent several weeks in the fall of 1903 and 1904 in northern Mexico, camped in the Sierra Madra Mountains. The first visit was to the region west of Cases Grandes, wherein are located various Mormon colonies, beginning at Colonia Dublan in the east, and ending at Chuichupa in the west, all on the Gulf side of the Sierra Madra watershed. It was in this region that Mr. Wilmot W. Brown discovered and collected the Thick-billed Parrot's (*Rhynchopsitta pachyrhyncha*) eggs mentioned by Mr. Thayer in his notes on pages 223 and 224 of 'The Auk' of April, 1906.

This bird is increasingly common from Chuichupa southward, and was especially an everyday sight during the trip, in 1904, to the mountains west of Parral. And, being so common, it was a matter of considerable surprise to notice that Mr. Thayer speaks of his specimens as "among the first, if not the first eggs of this bird

that have been found." Had the literature bearing on this bird and its eggs been accessible to the present writer on his return from his first trip in 1903, he doubtless would have learned of the rarity of these eggs, and would have been at greater pains on the second trip to get full data concerning eggs, nesting, etc. If the statement relative to the rarity of these eggs be correct, the writer's regret is the more keen, for the mountains west of Parral are alive with these parrots, and he is sure he could easily have arranged for the collection of numerous eggs and parent birds. This regret is tempered only by the pleasure afforded by the abundant opportunity the writer had to study these parrots.

In the higher mountains west of Parral, a region varying in altitude from 4000 to 10,000 feet, the Thick-billed Parrot is far more common than northward in the country west of Cases Grandes; in fact it is the characteristic bird of these high places, as much so as is the Magpie part of the local color of our Western Plains.

It was a great surprise to see how different is a wild parrot from a tame one; one must need get an idea from the latter that a parrot is a slow, lumbering climber, able to use its wings perhaps, yet little given to prolonged and vigorous flight. On the contrary, this Thick-billed Parrot flew across deep barrancas, from mountain to mountain, as swift and strong on wing as a duck, going often in large flocks, which were noticeably divided in pairs, each couple flying one above another as closely as beating wings allowed. Its loud squawk resounded overhead, across the barrancas, and in the pines all day long, from dawn till dusk; and many and many a time a flock could be heard long before it was in sight. The birds were not at all shy, as one could walk up under a tree and watch a pair climbing in it without disturbing them in the least. Here they seemed natural, at least to one whose previous knowledge of a parrot came via the cage bird, for they climbed about precisely as does the domesticated species, using bill and feet in the familiar way; on the wing the birds seemed anything but parrots. In whatever section we saw them, these parrots were most abundant in the pines. They frequented the tops of dead pines, and were, a good part of the time, going in and out of abandoned woodpecker nests, nests which we took to be those of the Imperial Woodpecker (*Campophilus imperialis*), for this splendid woodpecker is relatively com-

mon in the same neighborhood, and is the only woodpecker which excavates such a large hole. After watching the parrots a few days we were convinced that there must be young in every hole, judging by the seeming anxiety of the birds when about these holes, and their frequent visits to them. Having no climbers, we had to chop down the first nesting tree we found; it stood near our camp, at an altitude of about 9500 feet (aneroid reading of 21.95 inches); it took nearly all day to chop and burn through the trunk, as this standing dead timber becomes exceedingly hard on drying. When this tall tree fell its upper part broke into several pieces, and we were greatly disappointed to find that the fall had killed the two young birds which we found at the bottom of one of the old woodpecker nests. These young birds were only partly fledged, in fact quite immature for so late a date (Oct. 5); this might indicate that the eggs are laid late, unless the period of incubation be long, or the development of the young be unusually slow. The last flock seen in the fall of 1903 was noted about ten miles east of Chuichupa on the morning of November 15; it was a cold day, and ice had formed on the near by creek the preceding night, all going to show that this parrot can endure considerable cold. The writer collected some skins of this species, and could have collected many more had it seemed desirable. The local Mexican name for this bird is *Guacamayo, i. e.*, the Spanish for parrot, and the Mexicans thereabout do not mention any other variety as coming to their notice. These birds are handsome, big creatures, and were a source of endless interest and amusement to us all.

We were mistaken in assuming that every tree with woodpecker holes visited by the parrots contained young; we located another promising tree which had several holes to which a pair of parrots made frequents visits. While cutting down this tree the pair of parrots became very much excited, and betrayed every mark of anxious parents. After a half day's work this tree was safely felled, but we found absolutely nothing in any of the old holes.

The various places mentioned in Mr. Thayer's notes are amongst the Morman colonies spoken of above; they are only about 100 miles southwest of El Paso, Cases Grandes, on the Sierra Madra & Pacific Railroad, being the railway point for these colonies. At Cases Grandes an outfit can be gathered, and, too, it is a suitable

place to use as a base of supplies. The adjacent territory wherein are found the parrots is well up on the eastern slope of the Sierra Madras, about 40 miles from Cases Grandes, and varies in altitude from 7000 to 9000 feet; is rough, cut up by a good many deep ravines (but not true barrancas), and in these high levels the surface is sparsely covered by a growth of fine tall pines. It is a charming country to camp in, is easily travelled by horses, and guides and camp help can be secured amongst the Mormons, who are not adverse to earning good American gold. In addition, this country presents, it seems to the writer, a most interesting field and opportunity for an enthusiastic ornithologist; it impresses the writer that this region might give rich returns in migration data in the fall, and would surely supply the collector and observer additional rewards in the shape of local and southern Mexican species. The nights are cool after the middle of September, even at this low latitude; the days warm, but not hot, and withal the combination is a most unusual one. Our party in 1903 had no tent, everyone sleeping out under the trees. There was plenty of natural feed for the saddle horses and pack animals, though water was somewhat scarce, and there was cold enough most of the time to take the edge off the vigor of the rattlesnakes, fleas, and tarantulas, thus obviating these annoyances, which have to be reckoned with in the earlier months, especially further south.

Unless the writer's experience was exceptional, a trip of three or four weeks to the country west of Cases Grandes would be a comparatively inexpensive one. Three or four months, from September on, would give one a most enjoyable experience, valuable specimens and data, and, aside from possible rains in September, would be entirely comfortable and safe.

CHANGE OF LOCATION OF A CROW ROOST.

BY CHRESWELL J. HUNT.

THE lower Delaware Valley contains as many if not more winter Crows than any other one locality in the eastern States and one of the ornithological features of this section, during the winter, is the evening flight of the Crows toward their roosts.

One of the largest roosting sites is situated in Camden County, New Jersey, south of the town of Merchantville and some five miles from the city of Philadelphia. This is known to ornithologists as the Merchantville Roost, and here thousands of crows congregate to spend the winter nights.

On February 4, 1906, we spent the afternoon on Pensauken Creek and toward evening, when the crows began to gather preparatory to their evening flight, we decided to visit the Merchantville Roost.

Not knowing its exact location we waited until a well marked flight of crows began to pass over and then we followed them. After crossing numerous frozen marshy tracts, skirting others, climbing worm fences, and invading the privacy of many an orchard and cornfield — guided ever by the black line of homeward flying crows — we at last arrived at the roost. It was situated in a patch of oak and chestnut woodland of some eight or ten acres in extent lying a mile and a half or so south of Merchantville. From our station to the north of the woodland we could see three distinct flight lines coming in — the one we had followed from the northeast; one from the northwest; one from the west.

Some of the crows would pass on into the woods while others would alight upon the ground in the surrounding fields until parts of these fields were blackened and appeared, as Mr. Witmer Stone has described it, to have been burnt over.

As we sat on a fence beneath one of the flights the whirr made by the wings of the incoming birds was plainly heard. It resembled the rush of the surf along the beach. As night approached small flocks would rise from the fields and enter the woods until at last the ground was forsaken. All this while the birds kept up a con-

tinuous racket; possibly discussing the adventures the day had brought forth, at any rate they were advertising the whereabouts of their roosting spot to both friend and foe for a mile around.

As the sun sank in the west it seemed as if the whole top of the woods arose into the air — one immense flock of thousands and thousands of crows circled round and again settled in the trees.

Now they became more quiet, but it seemed that for some husky individuals sleep was out of the question, as a great many still persisted in making a noise.

When they had become comparatively quiet, we entered the woods. In the moonlight the leaf strewn ground, spotted all over with the white excrement, took on a ghostly aspect. Our progress was not very noiseless — we had to fight our way through the underbrush and pause now and then to untangle ourselves from a too friendly strand of green brier. As we startled the crows in the trees directly over us they would fly further into the woods.

When thus startled suddenly from their perches the birds seemed more or less bewildered and unable to see distinctly. We saw one crow which apparently flew against a limb, for after starting up he fell back and caught himself with an effort on a lower branch where he sat apparently dazed, and it was a minute or more before he was able again to take wing.

When well within the woods we shouted and the air became filled with a roar like thunder as the birds in the trees about us took wing and flew deeper into the woods. Then we left them but when well on our way to Merchantville we could still hear a few discordant 'caws' — possibly blessings called down on us for having disturbed their slumbers.

We described this homeward coming of the crows to a friend — how they came and came, thousands and thousands of them; how the ground was black with crows, etc., and he became greatly interested and wanted to see it himself; so we agreed to take him to the roost. It was on the evening of March 4 that we made the pilgrimage, and took him over the route followed by us a month before. When we reached the woodland there was not a crow to be seen. On the way we saw flight lines, which fact had somewhat puzzled me; but here in the woods, where a month before had been thousands, there was not a crow to be seen or heard. Even the

report of a revolver failed to dislodge any. Our friend was disgusted; I believe he thought we were playing some pratical joke on him. But where were the crows? Had they taken up domestic cares already, and was the roost forsaken for the season? Only the previous week, February 25, I had seen a big flight toward the roost. It did not seem likely that they would break up the roost so suddenly.

March 11 was spent on Pensauken Creek. Toward evening, as we were walking to our homeward bound trolley, I noticed a flight of crows passing over, flying high, but apparently in the direction of the roost. I proposed that we should go over to it and see if the crows were not there, but my friend — he who had been disappointed the week before — did not care to accompany me, so we said good night and I set out alone.

When I neared the woodland where the roost had been situated I noticed that a flight of crows was passing directly over it and going to the northwest; so I changed my course and followed them. They led me through muddy cornfields, past a little stream where the first Killdeers of the season greeted me with their cheery call; past a clump of woods where a large owl left his perch with noiseless wing and sought a darker retreat among the trees, and on to a patch of woodland a little less than a mile northwest of the old roost.

Two flight lines were coming in and a great many crows were already in the woods. Here was the solution of the problem. The crows had changed their roosting place, for what reason I am unable to say. Possibly some of the nearby farmers — always at war with them — had disturbed them.

In reaching this new roost the direction of flight had changed, so that we missed them entirely the week before.

The near approach of the nesting season had no doubt lessened their numbers, but here the main body had assembled, and the old roosting place had been entirely deserted. One would think that a few, from habit, would stick to the old roost but they seemed to have, with one accord, sought new sleeping quarters.

NESTING HABITS OF THE GREEN HERON.

BY IRENE G. WHEELOCK.

Plate VIII.

WHILE by no means a rare bird in southern Wisconsin, *Butorides virescens* is yet sufficiently uncommon to arouse some interest in his domestic affairs. Studied from the standpoint of an economist he merits the hearty support of every bird lover and snake hater on account of the untiring zeal with which he provides young snakes for the nourishing of his brood. Possibly he is a poorer fisherman than most of the heron family, for fish forms a comparatively small part of his diet. Snails, tadpoles, small frogs, snakes and crayfish are his chief food if one may judge by that given to the young. In studying the habits of most species, we have found it necessary to use a miniature stomach pump, in order to ascertain what food had been given to the nestlings. Heron infants, on the contrary, obligingly disgorge the contents of their crops whenever an intruder approaches the nest, thereby rendering a postprandial menu an easy matter.

Of the several broods of this species under observation during June and July, 1906, four were in evergreen trees, one in an apple tree, a part of a large orchard at some distance from water, and one in a small cottonwood at the edge of a swamp. The photographs illustrating this article were taken at the different nests as was most convenient for all concerned.

On June 16 we discovered the nests in the pines. At that date every nest contained young apparently about two weeks old, one brood numbering four, one five, and the others not being investigated closely. The nests were all at about the same height, twenty feet from the ground, about one half the diameter of a crow's nest, but much less bulky and less carefully built. For, smile as you will, *Corvus americanus is* a careful builder. Every nest of his that I have investigated has been strongly put together and lined with a felted mat of cow hair. But herons are inured to hardships from their birth, it seems, for no lining of any sort was found in any of the nests, the young reposing on the coarse twigs in the midst of indescribable uncleanness.

The same group of pines containing the heron nests was the home of numbers of Bronzed Grackles. In as much as the latter arrive from the south nearly two months earlier and nest two weeks earlier than the former, we wondered that, with all the forest from which to choose a nesting site, the herons should willingly come into such close proximity to disagreeable neighbors. The grackles were quarrelsome, thieving, noisy, and the only possible advantage the herons could hope to derive from them would be the loud alarm always given by them at the approach of danger. A 'lookout' on the top of the tallest pine scanned the country far and wide, and never once did we succeed in sneaking up unseen.

While we were still a hundred feet from the heronry, warned possibly by the outcry of this sentinel, the adult herons with one accord deserted, taking up their watch in distant trees, and only one of them all seeming to show any special interest in our proceedings. This one, whether male or female I know not, flew over the nest tree occasionally while we were photographing the young, evidently wishing to feed them. That they were not suffering from neglect in that line was evidenced by the "unswallowing" they did, one of them disgorging a fat crayfish four inches long and seemingly much too large a morsel for the size of the bird's throat. Afterward, when I viewed the œsophagus of a young heron, dissected and 'preserved,' I wondered still more how so much breakfast ever passed down so small a tube. The jointed lower mandible and pouch like throat could explain the attempt to swallow it, but the tiny œsophagus, scarcely one fourth of an inch in diameter, would seem to effectually bar its further progress. The four young herons as we approached stretched up to their tallest extent, which was about twelve inches, and 'stiffened,' swaying slightly from side to side with excitement like a lot of snakes. We thought catching a photo in this pose would be an easy task but an attempt to get nearer them resulted in a general exodus. Far out on the branches they scrambled, out of reach and as safe as though a mile away so far as my ability to follow was concerned. But a photo we must have, so we went on to the next nest. Here the birds were a day or so younger and the nest was in a better position for photographing.

During the week that followed a severe storm swept that district, bringing disaster to the heron colony. Young herons hung lifeless in every nest tree, usually head downward, having caught a twig in their strong feet and held on even after death overtook them. In one case the head and bill were hooked over the edge of the nest as if the young bird had been pushed out and had clung desperately to the last. In this same nest we found a young bird dead apparently from starvation. The storm accounted for a part of the tragedy but the fact of desertion on the part of both parents of this brood was too clearly proven. Curiously enough, the grackle nestlings, probably all second broods, were unharmed. Contrary to Mr. Finley's experience with the Night Herons, we found several young Green Herons alive and thriving under the trees where they evidently must have been fed by the adults. They squatted motionless at our approach, allowing us to catch them easily.

The heron family in the apple tree was probably a second brood as it was hatched June 27, a late date for a first brood. There were but two eggs and no evidence of there ever having been more. As soon as the little ones were fairly out of the shells and before the down was dry on their heads we had taken several pictures of them. One of these revealed a remarkable heron trait, for the brand new baby, who had *never been fed*, and who had scarcely opened his eyes upon this queer world, yet attempted to protest against our meddling by the characteristic heron method of defence. In his case the action was merely a nervous 'gagging' and would seem to indicate that this act is probably involuntary rather than intentional on the part of all herons.

In watching the various Green Heron broods develop we noted three points radically different from the habits of Passeres. First, they are fed only early in the morning and late in the afternoon, the wait between mouthfuls being also much longer. From four to six A. M. and five to seven P. M. are the periods of greatest activity. These are the only hours when the young made any clamor for food although the return of the parent at any hour was heralded by some signs of excitement on the part of the nestlings before we could perceive it even with close watching. One record, when young were seven days old, shows feedings at 4.06; 4.30; 4.58; 5.02; 5.43;

6.10; 7.04; all A. M. Another, 4.13; 4.22; 4.35; 4.50; 5.13; 5.40; 6.15; all A. M. The P. M. records were about the same, averaging about six feedings in the two hours. These were given by regurgitation but were *not predigested.* Crayfish, tiny fish, snails and slugs predominated in the morning if cloudy — frogs, tadpoles, larvæ of various insects and dragon flies, if sunny. This for the morning meal. The afternoon, if sunny, yielded small snakes, grasshoppers, crickets, fish and tadpoles; if cloudy, frogs and crayfish and worms seemed to be the easiest catch. We could not discover that snakes were ever brought on rainy, or crayfish on bright days. I believe some one has given this heron credit for digging into crayfish holes in order to secure this choice tidbit. Without doubt this may be true but he is such a wary hunter that never were we able to watch him catch his prey except when we could find him fishing in a quiet nook and steal upon him by boat.

The second point of difference is that food seemed to be just as abundant and brought just as frequently to the heron broods on wet as on clear days. This is not the case with the Passeres. I have frequently known young Robins, Thrushes, Jays, Catbirds, etc., to remain more than two hours without food on a rainy morning, and Mr. Ned Dearborn has suggested that this disproportionate feeding on dark and bright days may account for their irregular gain in weight.

This brings up the third point, which is that young herons increase in weight in a regular ratio, not dependent upon the weather conditions, but develop less rapidly than the young Passeres. Mr. John Ferry, by a carefully kept record of the increase in weight of young birds, proves that Yellow Warblers gain four times their weight, Thrashers five and one half times, Wood Thrushes five times, Robins eight times in eight days, but that while on some days they double their weight, on others there will be scarcely any gain, making the increase per diem an uncertain quantity. But the young Green Herons gained one half an ounce in weight every day for six days, weighing three fourths of an ounce at the beginning and three and three fourths ounces on the seventh day. We used postal scales, and Mr. Ferry's ingenious idea of swaddling the infants in order to make them stay on facilitated matters greatly in weighing the young herons. After the seventh day it was necessary to shake them out of the tree and catch them as they fell in order to get them

at all and, as this seemed more or less cruel as well as troublesome, we gave up trying to record their weight.

It was also interesting to note that, when first hatched, the herons stretched up to a height of three and one fourth inches and when seven days old eleven inches. The legs and feet, at first pinkish, were, at seven days old, a yellowish green, and at fourteen days had become a pale bluish green. The legs also had lengthened from one inch to four inches. The same change in color occurred in the skin about the end of the bill and around the eyes, it gradually assuming a brilliant pale green in place of the pinkish yellow of the newly hatched chick. The bill, one third of an inch long and of a soft yellow, at hatching, at fourteen days was nearly two inches in length and beautifully streaked longitudinally with brilliant pale green. As is characteristic in all young herons, the lower mandible was longer than the upper.

Another most remarkable change had taken place in feather development, the close white down that had enveloped them like swansdown having separated with the stretching of the skin into long waving hair like filaments, among which the feather quills protruded like spines on a hedgehog. Although bill, neck and legs were remarkably strong there seemed to be no power in the wing muscles as yet and the wings hung down at the sides in a loose-jointed fashion most distressing to the photographer.

Although always described as uttering a 'squawk' when disturbed the adult herons were silent on every occasion when we were about the heronry, leaving and returning to their nests without any audible protest against our intrusion.

We at first supposed that this species, being solitary, would not indulge in the 'dances' so characteristic of herons in general and were delightfully surprised just at nightfall in June to see one of these lone fishermen indulging in a 'hornpipe.' It was evidently for his own amusement, although possibly his mate may have been an unseen witness. Backward and forward, with queer little hops, he pranced first on one foot and then on the other. Although a less elaborate performance than similar ones I have watched by the Mademoiselle Herons, and particularly by the Black-crowned Night Herons, yet it was evidently prompted by the same exuberance of spirit, like a small boy who must turn a somersault or burst. The effect is as ludicrous as though a long-legged, dignified D. D. were to pause in his learned discourse and execute a double shuffle.

BIRDS OF TORONTO, ONTARIO.

BY JAMES H. FLEMING.

Part I, Water Birds.

TORONTO, the capital city of Ontario, is situated on the north shore of Lake Ontario, about forty miles east of the western end of the lake, in Lat. 43° 39′ 35″ N., Long. 79° 23′ 39″ W. The lake is at this point about 240 feet (Harbor Commissioner's gauge, zero, 244.8) above sea level.

The topography of the city and the country surrounding it is peculiar and a review will aid in understanding the ornithological conditions. The city for a greater part of its width is protected from the lake by a sandbar and island, once continuous. The sandbar runs west from near the eastern city limits for nearly three miles till it is divided by the Eastern Channel, and sending a spur north encloses what is known as Ashbridge's Bay. This is really a marshy lagoon of considerable size, and though filled in, in places, still affords food and shelter for many species of birds. Into this bay originally drained some eleven creeks, and at its western end the River Don, which now is confined to an artificial channel and flows into Toronto Bay somewhat further north than where the original outlet of Ashbridge's Bay was. The narrow sandbar that divides this bay from the lake is an important feature in the ornithological history of Toronto. It has been divided by an artificial cut giving access to the lake; the western portion is known as Fisherman's Island, and from here as well as the bay itself have come many unusual records. The building up of this portion of the bar with houses has seriously affected the freedom of several species of waders, which no longer call here on migrations.

From the Eastern Channel, Toronto Island runs in a westerly direction for nearly three miles, till about two miles south of the city, then turns north towards the city, giving the island a more or less triangular shape, and ending in the Western Sandbar, which is divided from the city by the Western Channel, the original outlet of Toronto Bay, which is itself inclosed on the south and west by the island, and on the east by Ashbridge's Bay. The island, originally covered with pine, has been invaded by sand, and

for many years was very nearly treeless; it is deeply cut into from the bay side by many marshy lagoons and channels. Of late years a good deal of filling in has been done; many houses have been built along the lake front, and the planting of willows and other soft-wooded trees, particularly at Island Park, has given shelter and increased the food supply, inducing many birds to stop here on migrations that formerly passed over the city; warblers such as the Cape May, the Tennessee, and the Connecticut, that were regarded as accidental, have become regular migrants.

Toronto Bay itself has suffered from the sewerage poured into it and several species of aquatic plants that afforded food for wild fowl have been killed out, but some ducks, such as the Long-tailed Duck or Cowheen, have found the conditions not unfavorable, and in winter whenever the ice allows, resort to the sewers in considerable numbers. These sewers now represent some six or seven small streams that formerly emptied into the bay from the north.

From the Western Channel the city runs along the open lake for three miles to the western city limits, following the inward sweep of the lake, which forms what is known as Humber Bay, the Humber River flowing into its western end about three quarters of a mile further on. Westward along the lake, Mimico Creek, the Etobicoke River, and, west again, the Credit River enters the lake, at a point thirteen miles from the center of the city.

Returning again to the city, the land rises gradually from the water front for some two and a half miles, and at North Toronto is 160 feet above the lake. From here an ancient lake margin rises abruptly some 70 feet to a plateau which sweeps across the back of the city and is broken only by the valley of the Don on the east, and the Humber on the west, and a few small ravines; a good deal of wood remains along this rise. This ancient water margin is one of a number (said to be thirteen) that exist between here and Lake Simcoe, some 60 miles further north; the highest point, 26 miles north of the city, near King, is 780 feet above Lake Ontario; it then declines till at Allendale on Lake Simcoe it is only 493 feet.

The shores of Lake Ontario about Toronto are low except on the east, at Scarboro (nine miles from the center of the city), where the land rises to 324 feet above the lake, and forms precipitous cliffs along the shore for some distance. Highland Creek and the Rouge River flow into the lake east of this point.

Toronto had originally many small ravines, through which flowed the streams that emptied into the water front. Most of these ravines are now filled in; in the northeast part of the city, in what is known as Rosedale, ravines of considerable depth exist and cross the back of the city to the valley of the Don; to the west of the city the ravines are not so numerous, though there are several between the western city limits and the Humber. This river and the Don run for some distance through flats between high banks.

Originally the city was covered by dense forests, and is so described in the early surveys (the first survey was made in 1793). Much of this timber was pine and hardwood mixed, but there were tracts of solid pine. This pine has long disappeared, only a stick remaining here and there on the ridge behind the city. There is much second growth pine and hardwood, and in the ravines outside the city some of the original forest remains. There are many wild places still remaining where forest birds may find suitable breeding places. In the city the streets are very generally planted with shade trees; there are many trees about the houses, and in the parks and open places there is plenty of shelter and food for birds.

A list of the birds recorded from the north shore of Lake Ontario would include only five species not given here; of these the Whooping Crane[1] and Magpie[2] are accidental; the Prothonatory, Golden-winged, and Hooded Warblers will eventually be taken here. It has been thought better to confine the list to the most important migration point on the lake, and to a place that has been the most carefully worked.

Toronto lies directly in the path of a great migratory route equidistant from the Atlantic, the Mississippi, and James Bay. There is strong presumptive evidence that two lines of flight converge, if not cross, here, one passing west through the Great Lakes, the other north towards Hudson Bay.

In preparing this paper I have traced all the unusual records back to the original specimens, and in all cases, except where mentioned, I have compared local specimens of every species recorded. The migration dates given are based very largely on specimens, and in the case of the waders exclusively so; consequently many

[1] McIlwraith, Birds of Ontario, 1894, 116.
[2] Auk, XV, 1898, 274.

of the dates are well within the mark, and can no doubt be extended. I have not thought it wise to give the average date; the amount of material is not sufficient, and in any case unless the records are made continuously in one place the results are misleading. In giving the dates between which a species has been found here, I have used those that have occurred more than once, and those that stand alone have been given as earliest or latest as the case may be.

From a very early period in the city's history there has been a more or less active interest taken in natural history, which has resulted in two or three collections of birds coming down to us, whose history is well known, and which give a very good idea of the ornithological conditions between 1840 and 1850. Of these the collection made by the late Hon. G. W. Allen was the largest and contained about 145 species. To the influence of Dr. Wm. Brodie we owe the formation of a small society which published its reports in the 'Proceedings of the Canadian Institute' from 1889 to 1891, and afterwards printed four numbers of the 'Biological Journal of Ontario' in 1894; these reports I have used largely, also the collection made by the society at that time. Mr. J. Hughes Samuel has allowed me to use his collection and records; the latter are of great importance as they cover a number of years of continuous collecting at Toronto Island, and I have particularly used them to correct my warbler dates. Mr. John Maughan, Jr., has allowed me to examine his large collection of mounted birds, part of which is now in the Provincial Museum, and I have found much useful data, particularly among the larger birds. I have also examined many rare records in the collection of Mr. J. H. Ames; Mr. C. W. Nash has allowed me to quote a paper published in 'Forest and Stream' (Vol. 38, 1892, 77) on 'Shore Birds Near Toronto,' and I have based many wader records on specimens taken by him. There are many mounted birds in the possession of sportsmen in the city, which have also been examined. My own collection of Toronto birds is a considerable one, and this paper is largely based on it.

1. **Colymbus holbœllii.** HOLBŒLL'S GREBE.— Spring and fall resident. A female taken April 12, 1896, is not in breeding plumage; full plumaged birds are rare. April 28–June 6 and August 22, 1905. Young birds are not uncommon in the Lake during October and probably earlier. Latest record, November 24, 1900.

2. **Colymbus auritus.** HORNED GREBE.—Common resident in spring and fall, March 14 to April 23 (probably to May); and from middle of September to end of November (October 27, 1896). Spring birds are in full plumage, or nearly so, when they arrive.

3. **Podilymbus podiceps.** PIED-BILLED GREBE.—Common resident in spring and fall, April 4 to end of May; September 7 to December 15. Mr. C. W. Nash took a male June 28, 1898; and it has been reported as breeding.

4. **Gavia imber.** LOON.—Regular migrant, April 16 to May 31 (abundant May 22, 1894); earliest fall record, September 7, 1895; a bird taken October 19, 1904, is young, and one taken November 4, 1899, is an adult in winter plumage. Loons probably remain on the lake till the end of November.

5. **Gavia lumme.** RED-THROATED LOON.—Regular migrant, not uncommon; adults in breeding plumage, April 28 to June 3; earliest record a male in winter plumage, March 14, 1899; in fall from October 6 to November 30. There are no winter records.

6. **Cepphus grylle.** BLACK GUILLEMOT.—One record, a female taken December 19, 1895. It is possible that this bird is *C. mandtii*, as its beak is small, and the plumage very white. The specimen is in a sealed case and a closer examination is necessary.

7. **Uria lomvia.** BRÜNNICH'S MURRE.—In 1893 this species entered Lake Ontario in considerable numbers; the first appeared at Toronto November 29, and they increased in numbers through December, all eventually dying of starvation. For the next ten years the birds were noted annually in November and December, but in decreasing numbers, none surviving very long. The migration of this maritime species into the fresh waters of the Great Lakes was so remarkable and accompanied by so many unusual features that I have recorded elsewhere a fuller account.[1]

8. **Alca torda.** RAZOR-BILLED AUK.—One specimen taken December 10, 1889, now in the Canadian Institute.[2] There is also a Hamilton record in the collection of Mr. John Maughan, Jr., taken December 9, 1893.

9. **Alle alle.** DOVEKIE.—One record, a female taken November 18, 1901,[3] in collection of Mr. John Maughan, Jr.

10. **Stercorarius parasiticus.** PARASITIC JAEGER.—Of regular occurrence, rare; adults taken June 20, 1891, and October 20, 1894; both in the light phase of plumage, the latter not quite adult. I have examined six local specimens and as many more from other points on Lake Ontario and Lake Erie; the majority are immature in the dark phase, and only one, a Toronto bird, is in the light phase of plumage.

[1] 'The Unusual Migration of Brünnich's Murre in Eastern North America.' (Proceedings IV International Ornithological Congress, London, 1905).

[2] Proceedings Canadian Institute, 1890, 200.

[3] Auk, XIX 1902, 94.

11. **Pagophila alba.** IVORY GULL.— One specimen taken by Mr. Wm. Loan on December 25 (1887 ?), and still in his possession. This is an immature bird heavily spotted with black. There is reason to believe that this gull is probably a regular visitor in winter to Lake Ontario.[1]

12. **Rissa tridactyla.** KITTIWAKE.— Accidental migrant; several were taken in November, 1899,[2] and one on October 31 of the same year; of these, all I examined were immature. Specimens recorded in 1889[3] I never saw and are possibly incorrect.

13. **Larus glaucus.** GLAUCOUS GULL.— Regular winter resident, not common, from December 3 to March 25. Mr. Maughan has one taken May 4, 1893, a male in the white phase of the immature. All that I have examined are in the mottled or white plumages, none being adult.

14. **Larus leucopterus.** ICELAND GULL.— One record, an immature female taken December 12, 1898, in the collection of Mr. J. H. Ames.[4]

15. **Larus marinus.** GREAT BLACK-BACKED GULL.— Regular winter resident, not uncommon, November 24 to February 16; earliest record September 18, 1896; latest May 26, 1897. All the birds I have examined or seen alive were mature.

16. **Larus argentatus.** HERRING GULL.— Common resident, abundant in spring and fall; does not breed here, but keeps up a regular communication with the lakes north of here, except in winter.

17. **Larus delawarensis.** RING-BILLED GULL.— Regular migrant, March 25 to April 25; and from September 25 to November 16, and probably later; earliest record August 20, 1890. Said to be a winter resident on the lake.

18. **Larus atricilla.** LAUGHING GULL.— Two records, one a mature male taken May 23, 1890, in Mr. Loan's collection[5]; the other a female taken June 1, 1898, in my collection. This bird lacks the black hood.

19. **Larus philadelphia.** BONAPARTE'S GULL.— Common spring and fall resident, April 19 to the middle of May, and from September 20 to November 6; earliest fall record August 4, 1890; latest, December 15, 1897.

20. **Sterna caspia.** CASPIAN TERN.— Regular spring migrant, April 29 to May 28. Sometimes occurs in flocks of some size (up to fifty). I have no fall records though this tern may occur in October; there are no immature birds in local collections.

21. **Sterna forsteri.** FORSTER'S TERN.— Possibly a regular migrant; I have examined only two birds, one a male, May 22, 1894, the other taken October 19, 1899.

22. **Sterna hirundo.** COMMON TERN.— Common migrant, May 25

[1] McIlwraith, Birds of Ontario, 1894, 42.
[2] Auk, XVII, 1900, 177.
[3] Proceedings Canadian Institute, 1890, 190.
[4] Auk, XVIII, 1901, 106.
[5] Proceedings Canadian Institute, 1890–91, 41.

to June 3 (probably through May); returning late in August, and remaining through the greater part of September; a small flock are said to have been in the vicinity of Humber Bay all through the summer of 1905.

23. **Hydrochelidon nigra surinamensis.** BLACK TERN.— Regular migrant, May 22 to June 16, and from July 27 to September 5 (probably all through May and September). A pair seen May 31, 1906, were apparently breeding.

24. **Æstrelata hasitata.** BLACK-CAPPED PETREL.— I have in my collection two specimens, one a male picked up dead on Toronto Island by Mr. George Pierce, October 30, 1894[1]; the other taken seventeen miles west on the lake shore by the late Mr. H. J. Baker, at about the same time, but the date is uncertain. The first bird was in very bad condition and must have been dead some days.

The first bird is much grayer on the back and head than the second; the ash-gray edging of the feathers is very pronounced on the back, while in the second the edging is browner and scarcely visible, the whole back being dark brown instead of gray as in the first. In the second bird the crown is brown, almost black, shading to grayish brown on the back of the neck, which is not divided by a white band; the cheeks and ear coverts are like the crown; the feathers of the forehead are sooty brown edged with white. In the first the tarsi and toes are as described, but in the second they differ; the exposed portion of the tibia to just above the heel joint is yellow (in the dried skin), the joint itself all around, and the back of the tarsus brownish black, the front yellow, the toes and webs yellow to the first joint, the rest black.

24. **Sula bassana.** GANNET.— A young bird taken in 1861 at Oshawa, 34 miles east of Toronto, is in the museum of Toronto University.[2]

25. **Phalacrocorax carbo.** CORMORANT.— Accidental; one record, a male taken November 21, 1896[3]. This bird was in an extremely exhausted condition when found, and is the only one I have seen from anywhere on the Great Lakes.

26. **Phalacrocorax dilophus.** DOUBLE-CRESTED CORMORANT.— Rare migrant; spring records are unusual (June 4, 1899); the majority of birds examined are young, August 30 to November 1.

27. **Merganser americanus.** AMERICAN MERGANSER.—Regular winter resident; the first flight occurs in September, but the bird is usually resident from early in November to the end of March; latest spring record, May 11, 1891.

28. **Merganser serrator.** RED-BREASTED MERGANSER.— Common migrant April 16 to May 7, and from October 15 to November 16; I have no winter records but Mr. C. W. Nash has found this species here from September 15 to April 17.

[1] Biological Review of Ontario, I, 1894, 11, 12.
[2] Canadian Journal, VII, 1862, 239.
[3] Auk, XVII 1900, 176.

29. **Lophodytes cucullatus.** HOODED MERGANSER.—Common migrant, March 29 to the end of April; in the fall the first flight occurs in August (August 15, 1897), and from October 26 to November 9 (probably to the end of November).

30. **Anas boschas.** MALLARD.— Rare migrant; I have records only for November, but my records are incomplete.

31. **Anas obscura.** BLACK DUCK.— Common migrant, March and April; the first return in August (rarely in July), plentiful in October and November; earliest record March 15, 1899, latest December 6, 1897.

This is the breeding form in southern Ontario north at least to the Muskoka Lakes; a female taken alive on her nest at Barnsdale, Lake Joseph, in May, 1905, belonged to this form, and it is no doubt the breeding form much further north.

32. **Anas obscura rubripes.** RED-LEGGED BLACK DUCK.— Common migrant. The dates given for the Black Duck include this rather doubtful form, which remains later and consequently more are taken in the fall than of the other.

33. **Chaulelasmus streperus.** GADWALL.— Rare migrant; a male in Mr. Maughan's collection taken November 2, 1901.

34. **Mareca americana.** AMERICAN WIDGEON.— Regular migrant; not common; the only dates I have are April 12 and October 27.

35. **Nettion carolinensis.** GREEN-WINGED TEAL.— Regular migrant, March 28 to probably May 1, returning early in September; latest record November 24, 1897.

36. **Querquedula discors.** BLUE-WINGED TEAL.— Regular migrant, April 2 to May 15 (May 31, 1906) and from July 28 to October 5. Not as common as it was; said to have formerly bred.

37. **Spatula clypeata.** SHOVELLER.— Rare migrant; spring records are unusual; all the fall records are between September 1 and 27.

38. **Dafila acuta.** PINTAIL.— Regular migrant, not very common. April 6 is my only spring record; in the fall, October 20 to December 6.

39. **Aix sponsa.** WOOD DUCK.— Regular migrant; April 1 to May 10; in the fall from late in August to October 27.

40. **Aythya americana.** REDHEAD.—Common migrant, and an irregular winter resident; a flock remained during the winter of 1901-02, leaving on March 15. A small flock of non-breeding birds remained through the summer of 1906, but they usually leave before April 16.

This duck decreased till about 1890 when no birds were seen; the increase began soon afterwards and they rapidly regained their old numbers.

41. **Aythya vallisneria.** CANVAS-BACK.— Rare winter resident. A small flock was here in the winter of 1900-01; a male was taken on February 23, 1901, and a flock was reported on November 21; another male was taken on March 31, 1905.

Canvas-backs were practically unknown here for many years, due no doubt to the general decrease that took place soon after that of the Redheads in eastern North America; the increase has resulted in a wide

extension of range, and recently Lake Ontario has been visited regularly by small flocks. Lake Erie seems to be still the center of abundance on the Great Lakes.

42. **Aythya marila.** SCAUP DUCK.— Common migrant and regular winter resident, from October 18 to March 4 (April 16, 1906). A small flock of non-breeding birds remained during the summer of 1906.

43. **Aythya affinis.** LESSER SCAUP DUCK.— Common migrant; does not winter here; arrives in March, remaining till May (May 22, 1894); earliest fall record July 21, 1890, latest October 29, 1895.

44. **Aythya collaris.** RING-NECK DUCK.— Rare migrant, April 1 to May 15.

45. **Clangula clangula americana.** AMERICAN GOLDEN-EYE.—Common migrant, and a regular winter resident, November 23 to April 27; Mr. Nash gives May 6 as latest date.

46. **Clangula islandica.** BARROW'S GOLDEN-EYE.— One record, a male, taken April 18, 1885, recorded by Mr. Ernest Seton[1]; this specimen was not preserved.

47. **Charitonetta albeola.** BUFFLE-HEAD.— Common migrant, April 20 to May 1; earliest February 27, 1894; latest November 13, 1900.

48. **Harelda hyemalis.** OLD-SQUAW.— An abundant winter resident, November 15 to May 12 (latest June 2, 1899). Whenever the western channel is free of ice, flocks of many hundreds of Cowheen, as they are called here, assemble to feed on the sewerage that flows into Toronto Bay at that point, and become very tame, allowing a close study of their habits; many die of starvation during the winter. In 1894 birds taken on May 2 were in full winter plumage, and by May 12 some were in full summer plumage and others had only partially changed, but as a rule they leave before changing.

49. **Histrionicus histrionicus.** HARLEQUIN DUCK.— Migrant, probably accidental. A female recorded by Mr. Ernest Seton,[2] and a male (no date), are in the collection of Mr. Maughan; a male (no date), and a female taken October 20, 1894,[3] are in my collection; both females are adults and the males are in moulting plumage; all four are, I think, fall birds.

50. **Somateria spectabilis.** KING EIDER.— Not uncommon in November and December; a few remain through the winter (February 4, 1889, Hamilton, Ont.). Birds in full plumage are rare; a male taken on November 18, 1895,[4] by Mr. Nash, now in the collection of Mr. J. H. Ames, is fully adult. Males in winter plumage and females in the full red plumage are rare, the majority being young. The males predominate. The usual dates are November 6 to December 6.

51. **Oidemia americana.** AMERICAN SCOTER.— Regular fall migrant, in October and probably November, never common; adult females are

[1] Auk, II, 1885, 337.
[2] Auk, II, 1885, 337.
[3] Auk, XVII, 1900, 176.
[4] Auk, XIII, 1896, 347.

rare, and no males in full plumage have been taken, nearly all the birds examined having been immature. Males in full plumage no doubt occur, as one was taken at Belmont Lake, near Havelock, Ont. (100 miles east of Toronto, October, 1900).

52. **Oidemia deglandi.** WHITE-WINGED SCOTER.— Regular migrant; common March 1 to May 11; in the fall through October and November; a few are said to winter; spring birds are nearly all in full plumage.

53. **Oidemia perspicillata.** SURF SCOTER.— Regular fall migrant, in October and November; the majority of the birds examined are immature, but there is a full plumaged male in Mr. Maughan's collection.

54. **Erismatura jamaicensis.** RUDDY DUCK.— Regular fall migrant; not common. Full plumaged birds are said to have been taken, but all examined are immature. They occur in October (October 16, 1895).

55. **Chen cærulescens.** BLUE GOOSE.— An adult taken on the lake shore, seventeen miles west of Toronto, is in my collection; another probably taken here is in the collection at Trinity University; both birds are adult. This goose has been taken at Ottawa, London, and Gravenhurst in Ontario.

56. **Branta canadensis.** CANADA GOOSE.— Regular migrant, March 10 to 30, returning October 16 to November 12; these dates can probably be extended. Earliest date February 24, 1906.

57. **Branta canadensis hutchinsii.** HUTCHINS'S GOOSE.— A female taken October 19, 1905, is in the collection of Mr. Maughan. The identification of this goose is frequently incorrect; a reputed local record was sent to me from England which proved to be a small Canada Goose; but Hutchins's Goose is of rare occurrence in Southern Ontario; one in my collection was taken at Port Rowan on Lake Erie, October 6, 1896.

58. **Branta bernicla glaucogastra.** WHITE-BELLIED BRANT.— Two records, a male taken November 12, 1899, and a female taken December 2, 1895; there are no specimens in the old collections.

59. **Olor columbianus.** WHISTLING SWAN.— Rare; probably accidental. I have seen only two fresh birds, one of which is now in the collection of Mr. C. K. Rogers; there are two in the collection at Trinity University that were probably taken here. Is seems likely that at one time this swan was of regular occurrence here.

60. **Olor buccinator.** TRUMPETER SWAN.— There are no recent records, but Prof. Hincks described in 1864 a new swan *Cygnus passmori*, taken here, which was really a young Trumpeter; and between 1863 and 1866 he was able to get six local birds to examine.[1] There are two specimens in the collection at Trinity University that were no doubt taken here

61. **Botaurus lentiginosus.** AMERICAN BITTERN.— Summer resident, April 11 to Nov. 4; abundant in spring and fall; breeds (May 31, 1906).

[1] Proc. Linnæan Society of London, Zoölogy, VIII, 1864, 1-7; and IX, 1868, 298-300.

62. **Ardetta exilis.** LEAST BITTERN.— Common summer resident from early in May to the middle of September; latest record, November 28, 1894; breeds (June 28, 1894).

63. **Ardetta neoxena.** CORY'S LEAST BITTERN.— Sixteen of this interesting bittern have been taken at Toronto (about two-thirds of the known specimens), between May 18, 1890, and September 8, 1899. These dates are also the earliest and latest. The young have been taken from August 3 to 17. All the birds have been taken in a comparatively small extent of marsh in Ashbridge's Bay, and those who have taken them agree that Cory's Bittern is much more easily approached than the Least Bittern, though more difficult to distinguish in the marsh owing to its dark color. All, or nearly all, exhibit albinism in a slight degree, and in the case of an adult male taken August 7, 1899, melanism is also present. A nest was taken June 15, 1898.[1] For a list of Toronto records see Auk, XIII, 1896, 11, and XIX, 1902, 77.

64. **Ardea herodias.** GREAT BLUE HERON.— Common migrant, March 19 to April 7, and probably later; a young bird was taken July 24, 1891, but they usually commence to return a week later (August 1, 1897). They are common through August, and a few remain till late in November (November 17, 1901). Earliest record February 1, 1891 (Mr. J. H. Ames).

65. **Herodias egretta.** AMERICAN EGRET.—A specimen in my collection taken at Port Union (17 miles east of Toronto) May 24, 1895; this is the only definite record, but white herons have been reported from various points on the lake that seem to be of this species. Dr. Wm. Brodie says a pair bred regularly many years ago (about 1870) at Port Union and several were shot.

66. **Butorides virescens.** GREEN HERON.— Regular migrant, not common, April 30 to May 24; they reappear in June (June 25, 1904), and from August 7 to September 17.

67. **Nycticorax nycticorax nævius.** BLACK-CROWNED NIGHT HERON. — Regular migrant, rather rare in spring, May 24 to June 14; young birds August 8 to 27. In 1900 Mr. J. Hughes Samuel recorded Night Herons from August 1 to October 12.

68. **Nyctanassa violacea.** YELLOW-CROWNED NIGHT HERON.— A young bird taken August 15, 1898, by Mr. John Maughan, is in the Provincial Museum.[2]

68. **Grus mexicana.** SANDHILL CRANE.— A pair taken many years ago at Toronto are in the collection of Mr. Maughan.

69. **Rallus elegans.** KING RAIL.— Migrant, probably accidental; one was taken in September, 1903, and there are two other local records.

70. **Rallus virginianus.** VIRGINIA RAIL.— Summer resident; arrives late in April and is common in May; young birds from July 7 to August 27. A few remain till October. Breeds (July 6, 1891).

[1] Auk, XVIII, 106.
[2] Auk, XXIII, 1906, 220.

71. **Porzana carolina.** SORA RAIL.— Common summer resident, April 24 to September 21. Breeds (May 11 to June 31).

72. **Porzana noveboracensis.** YELLOW RAIL.— Regular fall migrant, rare; earliest August 5, 1896; usually from September 12 to October 15. There is but one spring record, a male taken by Mr. Nash, April 24, 1899.

73. **Ionornis martinica.** PURPLE GALLINULE.— One taken at the mouth of the Rouge River (16 miles east of Toronto), April 8, 1892.[1]

74. **Gallinula galeata.** FLORIDA GALLINULE.— Common summer resident, abundant in migrations; arrives about the middle of April, departs towards the end of October. A young bird taken September 29, 1898; downy young, June 6, 1895; nest taken June 23, 1889.

75. **Fulica americana.** AMERICAN COOT.— Regular migrant, fairly common, April 11 to May 29; returns in September and October (September 29, 1899).

76. **Crymophilus fulicarius.** RED PHALAROPE.— Regular migrant in the fall, rare; all I have examined are young birds, September 12 to November 14, but in the museum of the Geological Survey at Ottawa there is a full plumaged bird said to have been taken here. This is probably the commoner of the three phalaropes, and is usually taken among duck decoys

77. **Phalaropus lobatus.** NORTHERN PHALAROPE.— Regular migrant, rare; an adult male taken June 7, 1890, is in my collection, and I have seen an adult female taken here, but such records are exceedingly rare. Young birds occur regularly, September 22 to October 31.

78. **Steganopus tricolor.** WILSON'S PHALAROPE.— Rare migrant; adult female May 22, 1855; adult male June 2, 1890, and a young female August 15, 1890, are in my collection. Mr. J. H. Ames has a female taken May 25, 1890, and a young bird. A supposed hybrid belonging to Mr. T. Harmer of Tacoma, Wash., proved to be a young bird of this species. Besides these there are two or three more in local collections, all adults. There are indications that at one time this species was of much more regular occurrence than it is now.

79. **Recurvirostra americana.** AMERICAN AVOCET.— Accidental migrant, two records, one a bird in full plumage in the possession of Mr. Wm. Loan, the other an adult male in the gray plumage taken September 19, 1901.[2]

80. **Philohela minor.** AMERICAN WOODCOCK.— Regular migrant, not common; April 2 to 29, returning in July (July 10, 1891) and August (August 17, 1902), and from October 12 to November 5. Earliest record, March 25, 1893; latest, November 11, 1896. Woodcock may possibly breed here.

81. **Gallinago delicata.** WILSON'S SNIPE.— Regular migrant; fairly common in May, returning September 11 to October 27; earliest record, March 28, 1897; latest, November 24, 1894.

[1] Biological Review of Ontario, I, 1894, 10.
[2] Auk, XIX, 1902, 79.

82. **Macrorhamphus griseus.** DOWITCHER.— Regular migrant, not common, May 16 to 31; one taken August 1, 1894, is in full plumage; one taken August 24, 1891, and one September 15, 1889, are young birds.

83. **Macrorhamphus scolopaceus.** LONG-BILLED DOWITCHER.— Rare migrant; there is a specimen in Mr. Ernest Seton's collection, taken September 3, 1888; one without date in my collection, and a full plumaged bird from Hamilton (39 miles west), August 12, 1891.

84. **Micropalama himantopus.** STILT SANDPIPER.— Regular fall migrant, not common; adults in full plumage, July 18 to 28, and young August 9 to September 26; there are records of birds from June 25 to 30 but I have not seen these specimens.

85. **Tringa canutus.** KNOT.— Regular migrant, rather common in spring, May 25 to June 6; I can find no adult birds on the return flight; the young come from August 23 (earliest August 9, 1896) to the first week of September (Sept. 5, 1886, Hamilton, Ont.) and are not common.

86. **Arquatella maritima.** PURPLE SANDPIPER.—Regular fall migrant, rare, October 27 to December 7; two birds in my collection are apparently adults. This species is probably overlooked owing to the lateness of its migration.

87. **Actodromas maculata.** PECTORAL SANDPIPER.— Common fall migrant. Mr. Nash gives July 23, 1891, as the earliest record; usually from August 13 to 31; and September 26 to October 27, 1891.

88. **Actodromas fuscicollis.** WHITE-RUMPED SANDPIPER.— Regular migrant, not common, May 26 to June 14 (latest June 21, 1898); returning August 23 to September 24; and October 26 to November 2.

89. **Actodromas bairdii.** BAIRD'S SANDPIPER.— Regular fall migrant, not uncommon; all I have examined are young birds, August 12 to September 24. Mr. Nash gives July 28 to October 10.

90. **Actodromas minutilla.** LEAST SANDPIPER.— Abundant migrant, May 4 to 20; the adults return during the first half of July (July 4, 1891) and the young from August 10 to 24. Mr. Nash has records from June 28 to July 19, and to the middle of September.

91. **Pelidna alpina sakhalina.** RED-BACKED SANDPIPER.— Abundant migrant May 12 to June 2 (latest June 13); returning October 9 to 22, and through the first half of November. Adults are rare in fall.

92. **Erolia ferruginea.** CURLEW SANDPIPER.— A single specimen, taken by Mr. Wm. Loan about 1886[1]; this bird was afterwards destroyed except the head which is now in my collection, and which belonged to a nearly adult bird.

93. **Ereunetes pusillus.** SEMIPALMATED SANDPIPER.— Regular migrant, common May 24 to June 2, returning in July (July 21, 1891); the young August 24 to September 10. Mr. Nash gives for 1891, from May 24 to June 13; July 21 to August 10, when first young were observed,

[1] McIlwraith, Birds of Ontario, 1886, 2; 1894, 145.

and on till middle of September. I can find nothing approaching *E. occidentalis*.

94. **Calidris arenaria.** SANDERLING.— Regular migrant, common May 21 to June 2; returning August 24 to 28; the young September 4 to 12.

95. **Limosa fedoa.** MARBLED GODWIT.— Rare migrant in spring, probably accidental; a female taken May 30, 1895, is in the Provincial Museum, and one taken June 7, 1890, is in my collection.

96. **Limosa hæmastica.** HUDSONIAN GODWIT.— Rare fall migrant; a young bird taken August 20, 1898, is the earliest record; two specimens taken September 25, 1894, are in winter plumage; two taken October 20, 1890, are adults in changing plumage. Mr. Wm. Loan has a specimen in full plumage, and Mr. J. Hughes Samuel saw one June 13, 1895.

97. **Totanus melanoleucus.** GREATER YELLOW-LEGS.— Regular migrant; common April 10 to May 13; earliest March 26, 1901, latest spring record June 9, 1894. Mr. Nash says "returning, first July 28 (1891), few seen till October 27, on which day I saw last; last year I noted a flock November 19."

98. **Totanus flavipes.** YELLOW-LEGS.— Regular migrant, common April 30 to May 17, the young August 7 to September 15. Mr. Nash says, "seldom in flocks; saw none this spring (1901); on return first appeared July 18 (adult female), but few were seen from that time until August 22, when they became common, and remained until October 6." Latest record, October 18, 1890.

99. **Helodromas solitarius.** SOLITARY SANDPIPER.— Regular migrant, local and not very common; I have only two spring records, March 16, 1902, and May 18, 1893; returning, adults July 10 to August 10, young August 13 to September 1. Mr. Nash gives September 16, 1891, as latest record.

100. **Symphemia semipalmata inornata.** WESTERN WILLET.—Rare migrant. I can find only five specimens in local collections; the only one with a date is a female in full plumage taken July 20, 1898, in the Provincial Museum; an adult in winter plumage is in my collection. A careful comparison of the local specimens proves them to belong to the western form.

101. **Pavoncella pugnax.** RUFF.— A male in full plumage but with the face feathered, was taken on Toronto Island in 1882, and is now in the museum of the Geological Survey at Ottawa. In 'Catalogue of Canadian Birds,' Macoun, p. 177, the date is given as 1875, but this is incorrect, and the female there recorded is a specimen of the Bartramian Sandpiper.

102. **Bartramia longicauda.** BARTRAMIAN SANDPIPER.— Said to have been an abundant migrant; now rare. In 1893 birds were taken from May 6 to June 7, and were said to have bred a few miles west of the

[1] Auk, II, 1885, 336.

city; Mr. George Pierce took full grown young in July or August of that year. There are no recent records.

103. **Tryngites subruficollis.** BUFF-BREASTED SANDPIPER.— Regular fall migrant, rare, September 1 to October 4.

104. **Actitis macularia.** SPOTTED SANDPIPER.— Common summer resident, April 23 to October 3; earliest nest May 14, latest June 16.

105. **Numenius hudsonicus.** HUDSONIAN CURLEW.— Regular migrant, not uncommon, May 27 to June 2; the old birds return early in July (July 4, 1904, July 17, 1906), and the young from September 1 to 15, but are very rare.

106. **Numenius borealis.** ESKIMO CURLEW.— There are two specimens, said to have been taken on Toronto Island in 1864, in the museum of the Geological Survey at Ottawa; the authority is Mr. S. Herring, who mounted the birds. The Eskimo Curlew can never have been more than accidental on Lake Ontario. I have carefully examined all the material available, and have so far found only two more records, one in the McIlwraith collection taken at Hamilton,[1] I think an adult; the other was taken at Wolf Island, near Kingston, Ont., October 10, 1873, and is marked "female." I think is it a young bird; it is now in the British Museum.

107. **Squatarola squatarola.** BLACK-BELLIED PLOVER.— Regular migrant, fairly common, May 22 to June 2; returning in July (July 23, 1890). Of two females taken in August, 1891, one, on the 28th, is adult, the other, on the 31st, is a young bird. Young birds taken at Hamilton from August 9 to September 5, are in my collection; Mr. Nash gives the latest dates as September 15, 1898, and October 17, 1895.

108. **Charadrius dominicus.** AMERICAN GOLDEN PLOVER.— Fall migrant, rare; said to have been formally abundant at irregular intervals. Mr. Wm. Loan describes a flight that occurred about 1887, when thousands of birds assembled on the eastern sandbar at night, and returned to the open fields at daybreak. I have no records between 1898 and 1905, when five young birds were taken on September 27. Old birds in changing plumage occur from August 25 to September 15, young from September 16 to 27; there are some records as late as November 9, but I have not seen these birds.

109. **Oxyechus vociferus.** KILLDEER.— Summer resident, not uncommon, April 6 to October 24; earliest March 25, 1891. Breeding records, June 3 and 18, full sets. Killdeer are very abundant and widely distributed during migrations.

110. **Ægialitis semipalmata.** SEMIPALMATED PLOVER.— Common migrant, May 12 to June 2 (latest June 6, 1895); Mr. Nash has records of adults July 5, 1890, and July 23, 1891; the young arrive in August (August 24 to 29). Latest records, September 10, 1892, and October 26, 1895.

111. **Ægialitis meloda.** PIPING PLOVER.— Regular migrant, not very common, May 16 to 24 (earliest May 1, 1891); and June 20 to 25.

Curiously enough all the old specimens in local collections are referable

[1] McIlwraith, Birds of Ontario, 1894, 160.

to *meloda*, and the last record is June 20, 1894; the first record of *circumcincta* is May 24, 1891, and all recent records belong to this form.

112. **Ægialitis nivosa.** SNOWY PLOVER.— Two records: one specimen taken by Mr. J. Foreman in May, 1880, was identified by Mr. Ernest Seton [1] and has since been destroyed; the other is in the collection of Mr. J. H. Ames, and was taken July 6, 1897.[2]

113. **Arenaria morinella.** RUDDY TURNSTONE.— Regular migrant, common in spring, May 18 to June 2; an adult taken June 16, 1895, and a flock of seven seen June 17, 1894; the young arrive in September (September 4, 1891).

HYPOTHETICAL LIST.

1. **Gavia arctica.** BLACK-THROATED LOON.— I recorded[3] a specimen in error; it proves to be a very small Loon, in winter plumage A pair are mentioned in Prof. Hincks's list of birds sent to Paris.[4]

2. **Uria troile.** MURRE.— A specimen recorded by me is an error.[5] A careful examination of the printed records prove they are based on hearsay evidence, and as far as I know no specimens exist from any where on the Great Lakes.

3. **Stercorarius pomarinus.** POMARINE JAEGER.— I can find no specimens and no reliable printed records from anywhere on the Great Lakes; the records probably refer to *S. parasiticus*.

4. **Stercorarius longicaudus.** LONG-TAILED JAEGER.— This species no doubt occurs on Lake Ontario but I have not seen specimens. Mr. W. E. Saunders has recorded the taking of two at Rondeau, Ont., on Lake Erie,[6] October 2, 1900.

5. **Larus franklinii.** FRANKLIN'S GULL.— This is given in Prof. Hincks's list;[6] recent records no doubt refer to *L. atricilla*.

6. **Xema sabinii.** SABINE GULL.— This is given in Prof. Hincks's list but there is nothing known about the specimen sent to Paris.

7. **Sterna paradisæa.** ARCTIC TERN.— This is given in Prof. Hinck's list; possibly it refers to *S. forsteri*.

8. **Sterna antillarum.** LEAST TERN.— The Ontario records all

[1] Auk, II, 1885. 335.

[2] Auk, XIV, 1897. 412.

[3] Auk, XVII, 1900. 176.

[4] 'Catalogue of Birds Known to Inhabit Western Canada. By the Rev. W. Hincks, F. L. S., &c.' Journal of the Board of Arts and Manufactures for Upper Canada, VII, 1867, 9–12 (also reprinted as a separate). This list was prepared in view of sending a collection of birds to the Paris Exhibition of 1867; it contains two hundred and seventy-one species, of which twenty-nine were not obtainable. By 'Western Canada' is meant Ontario, but the birds sent were with few exceptions taken at Toronto.

[5] Macoun, Catalogue of Canadian Birds, 1900, 22.

[6] Ottawa Naturalist, May, 1902.

refer to immature Black Terns; I have seen no specimens from the Great Lakes.

9. Pelecanus erythrorhynchos. AMERICAN WHITE PELICAN.— A rare straggler; has been reported several times, but no specimens have been taken here, though there are several Lake Ontario records.

10. Pelecanus occidentalis. BROWN PELICAN.— Prof. Hincks gives this in his list, and one was sent to Paris, no doubt the one recorded in one of the agricultural journals of an earlier date, the reference to which I have been unable to find. The bird was said to have been taken near Toronto.

11. Somateria dresseri. AMERICAN EIDER.— Prof. Hincks gives this in his list, and a pair were sent to Paris. I have carefully examined a number of eiders from the Great Lakes, including several recorded as this species; all prove to be *S. spectabilis.*

12. Chen hyperborea. LESSER SNOW GOOSE.— I have a specimen probably taken here, and Mr. John Bunker remembers one having been shot here some years ago. I have recently examined five specimens taken in southern Ontario; they all belong to this form, and it seems likely that *C. h. nivalis* does not occur on the Great Lakes.

13. Anser albifrons gambeli. AMERICAN WHITE-FRONTED GOOSE.— Said to have occurred here, but there seem to be no specimens in local collections. This goose, however, occurs in southern Ontario; two were taken at Port Perry, Ont., April 15, 1894, one of which I examined; there is an adult in the museum at Toronto, and one is recorded by McIlwraith, both from the St. Clair Flats.

14. Plegadis autumnalis. GLOSSY IBIS.— One was mounted by the Rev. John Doel many years ago and was said to have been taken at Toronto; McIlwraith records a pair from Hamilton, one of which was sent to Paris and is the one referred to in Prof. Hincks's list.

15. Porzana jamaicensis. BLACK RAIL.— Prof. Hincks gives this in his list, and one was sent to Paris, possibly the one taken at Ingersoll, Ont., in 1857.[1] Young Virginia Rails have been confused with this species.

16. Numenius longirostris. LONG-BILLED CURLEW.— There has been considerable confusion in the identification of the three curlews credited to the Great Lakes; a very careful search has failed to find any authentic specimen from this region of the Long-billed Curlew; I have, however, found the Hudsonian Curlew so named, and the Eskimo Curlew marked Hudsonian. There is in the museum of Toronto University a correctly identified Long-billed Curlew, but the collection is a general one, and the bird may have come from anywhere. Prof. Hincks gives it in his list, and one was sent to Paris; there are none in any Ontario collections I have examined.

17. Ochthodromus wilsonius. WILSON'S PLOVER.— Prof. Hincks gives this species in his list, and a pair were sent to Paris; beyond this nothing is known.

[1] Canadian Journal, IV, 1859, 389.

THE SPRING MOULT OF *LARUS ATRICILLA* LINN.

BY C. WILLIAM BEEBE.

Plate IX.

THE subject of the alleged color change in full-grown feathers in certain specific cases, would seem hardly worthy of renewed comment after the thorough papers of Allen and Chapman in the 'Bulletin' of the American Museum, Vol. VIII, 1896, pp. 1–44, and of others since then. But judging by analogous biological problems, it is only by reiterated and absolutely overwhelming proof, that any theory, which has once gained wide credence, can be refuted.

With this intent I offer a few brief notes made in a series of weekly observations on the spring moult of the head and neck of an individual Laughing Gull (*Larus atricilla* Linn.), which, brought as a nearly hatched embryo three years ago from Cobb Island, Virginia, was hatched and reared in the New York Zoölogical Park, and has assumed the full adult plumage.

Although the individual gull under consideration was kept in an indoor flying cage in a house heated to about 60° throughout the whole of last winter, yet on February 24, the time of the first examination, the early condition of the moult showed that it was normal as compared with the first appearance of black feathers in birds shot in Virginia. From this date on, the bird was confined in an outdoor flying cage, with plenty of room for flight.

February 24.— At this time the forehead is almost white, the feathers of this part showing but a small ashy portion near the base of the shaft. Proceeding backward over the crown and occiput, the winter feathers show an increasing amount of ashy color and consequent diminution of white tips to the barbs, until on the nape, the predominance of the former hue produces the effect of the dull nuchal ring of winter. The only feathers which appear loose in their sockets and about to be moulted are the small ones about the eyes. At this examination there are on the head twenty half-grown new feathers, all in a narrow area on the crown, partly



FIG. 1.—HEAD OF *Larus atricilla* IN WINTER PLUMAGE.



FIG. 2.—HEAD OF *Larus atricilla* IN FULL SPRING PLUMAGE.

protruding from their sheaths. These are of a uniform dark slate color with conspicuous white tips to all the barbs.

March 3.— Considerable change is apparent since last week's examination. Sixteen new feathers have appeared on forehead and crown, all with long white tips. The most marked change is about the eyes, where the white encircling feathers and the dark fluffy, down-like ones at the anterior edge have all appeared and grown to almost full size.

March 10.— Hardly any progress in the moult is noticeable since last week. A number of the winter feathers come out at a touch. The severe cold of the past week may have temporarily retarded the moult. An area three quarters of an inch square, on the crown, was cleared of new feathers (three in number) and thirty winter feathers, not much worn and firm in their sockets, were conspicuously marked with indelible ink.

March 19.— A very noticeable increase in new feathers has taken place, about eighty having pushed out the winter feathers and showing a full eighth of an inch of dark sheaths beyond the papillæ. Fourteen of the thirty marked feathers have been shed.

The white tips of the score of growing feathers which were observed on February 24 have almost disappeared. From careful comparison with other new feathers in various stages of growth, it appears that these white tips remain until the feather has reached its full size, then not singly, but almost *en mass*, they break off and are lost, never contributing, to any appreciable extent, to the color of the hood.

During the last two weeks a great deal of wear has taken place among the remaining winter feathers. Those on the crown and occiput (including the ink-marked ones) have lost much in symmetry of vane and in number of distal barbs. On the chin and throat, a similar condition of wear and tear is apparent to even a much greater extent, only here it is the bases of the feathers which have suffered most, in many cases having become completely denuded of barbs, while the distal half is still perfect. Everywhere is a scattering of new, half-grown feathers, although those which remain of the old plumage seem as firmly fixed as ever. The most careful search fails to reveal one feather, which, at a glance, cannot be instantly classified either as a worn-out winter,

or a fresh, perfect teleoptile; never a trace of regeneration of barbs or infusion of new color.

March 29.— Only three ink-marked feathers are left, the ink being as bright as ever, while in the place of those which have fallen out are the half-grown, slate-colored shafts of the new plumage.

April 4.— The moult is well toward completion superficially. All the inked feathers have disappeared, and although the new plumage of the dark hood seems dense and full-grown, yet everywhere new feathers are sprouting, hundreds showing only as tiny bluish sheaths. The half-grown feathers which are as yet protected by the full-grown ones still show conspicuous white tips, but no trace of this is visible in a casual examination of the unruffled surface of the hood; it presents a solid tone of dark slate, except where the few scattered winter feathers still remaining show as flecks of ashy white.

Examination of the growing feathers under a low power lens, with reference to the white tips, shows that all uniformity in extent is absent, except that the white extends down the vane to an equal distance on each side of the rhachis. In two nearly-grown but unworn feathers, side by side, the white in one is a mere faint distal fringe, while the other is colorless for fully one-third of the vane. In frequent instances a narrow terminal band of normal dark pigment encloses the broader white area, emphasizing the unstable character of this passing color-phase.

In scores of feathers, from fully-moulted birds, which I examined under moderately high powers, not one barb showed the slender, transparent, slightly flattened tip which characterizes the absolutely unworn barb. So however fresh and perfect the feathers composing the newly acquired hood appear, yet every one has already passed through an important stage of wear. In order to demonstrate fully that the disappearance of the white tips was by wear and not by subsequent infusion of pigment in the growing feather, I inked a number of feathers on the colorless portions and found that the marks invariably disappeared by the time the feather reached maturity.

During the course of the moult the entire sheath of the mandibles peels off; in one case a large piece coming off at once, showing the fresh horn beneath bright carmine in color.

GENERAL NOTES.

The American Egret (*Herodias egretta*) **in the Catskill Mountains.**— On July 18, 1906, I saw at East Windham, New York, three of these birds on the topmost branches of a tree near a hemlock swamp and secured one of them, and another on the following day. Both birds were young females, and undoubtedly, according to a peculiar habit of the family to wander northward during the latter part of the summer, were erratic visitors in this locality. Upon inquiry among several inhabitants, I was informed that this species had never been seen by them in this locality before, nor had they bred there, and that the flock consisted of six birds on July 16, two days before my arrival.— J. A. WEBER, *New York City.*

A Second Yellow-crowned Night Heron (*Nycticorax violaceus*) **at Portland, Maine.**— A female of this species was shot at Thompsons Point, Portland, Me., April 11, 1906. It passed into the hands of Mr. Thomas James, foreman of the W. D. Hinds taxidermy establishment, and was obtained from him by Mr. Walter Rich, who very kindly gave it to the writer. The other specimen, also a female, was taken April 13, 1901, and recorded by Dr. H. H. Brock who now has it (Brock, Auk, XIX, p. 285).— ARTHUR H. NORTON, *Museum of Natural History, Portland, Me.*

A Late Spring Record for the Yellow Rail (*Porzana noveboracensis*) **in Massachusetts, with Remarks on the 'Ornithological Mystery.'**— On May 26, 1906, Mr. John J. Haley had the good fortune to secure a female Yellow Rail, which was found and retrieved alive by his dog while working over a fresh water meadow in Dedham. The bird was given to Mr. G. E. Browne, an experienced taxidermist, and he tells me that he found an egg started in the oviduct of the bird which he believed would have been laid in three or four days.

This instance, though not a positive breeding record, is of additional interest inasmuch as it may throw some light on the 'Ornithological Mystery' or 'Kicker' (Brewster, Auk, XVIII, Oct., 1901, pages 321 to 328). I had always supposed that the identity of the 'Kicker' was disclosed by Mr. J. H. Ames, Auk, XIX, Jan. 1902, page 94, where he describes the notes of a Yellow Rail, which he had in captivity, as identical with those of the 'Kicker' which Mr. Brewster had heard in Massachusetts, but Dr. Charles W. Townsend, in his 'Birds of Essex County,' published in 1905, refers to the 'Ornithological Mystery' as the Little Black Rail, after talking with Mr. Brewster about a bird that he heard in July, 1903.

To anyone not familiar with the 'Kicker' and acquainted only with the material published on the subject, this non-acceptance of Mr. Ames's solution seems to require some explanation. Mr. Brewster tells me that

the identicalness of the Yellow Rail and the 'Kicker' did not impress him after reading Mr. Ames's article for two reasons: first, that the Yellow Rail's notes were heard in the autumn, and second, that it uttered its cries when disturbed or irritated by the presence of persons in the room or by the light of the lamp. He also says, "nothing is more certain to my mind than that what I have heard is the spontaneous love song of the 'Kicker,' and that it is uttered chiefly if not solely during the season of reproduction. Assuming (what is quite possible, of course) that it may be occasionally produced in autumn, I do not consider it likely that it would be ever given under conditions such as Mr. Ames describes."

In discussing the probable identity of the 'Ornithological Mystery' Mr. Brewster dismisses the Yellow Rail with the statement: "There are no good reasons for suspecting that the Yellow Rail ever breeds in any part of New England." However, now that it has been found in Massachusetts at a corresponding date to some of the 'Kickers,' and under conditions which may possibly indicate its breeding in the vicinity, it may at least be considered in determining the identity of the latter. Theoretically it seems hardly probable that two different species of birds could utter exactly the same notes, regardless of season. This combined with the fact that the notes of the Little Black Rail as heard in the south, where its calls have been identified, do not bear a close resemblance to the notes of the 'Kicker' would seem to point towards the Yellow Rail as a solution of the mystery.

With the exception of gunners, few persons have met the Yellow Rail, and comparatively little is known of the bird during the breeding season. Mr. Edward A. Preble has described their notes in 'North American Fauna' (No. 22, page 93) and has written me as follows about the birds which he heard near York Factory, Hudson Bay: "The notes I heard were a succession of chips or clucks somewhat similar to the alarm notes of a Brown Thrasher, but less sharp. Stated in 'kiks' it would be 'kik-kik, kik kik kik.' Sometimes an additional 'kik' was given, making the last bar consist of four instead of three notes. I did not hear the 'crow' alluded to by Mr. Brewster, but it is quite possible I did not hear the full song, as my observation covered only a part of one day. In spite of this discrepancy I have been of the opinion that the notes described by Mr. Brewster were those of the Yellow Rail."

The secretive habits of both these Rails as well as the difficulty of observing or securing them in the spring makes one record at this season of exceptional value, and the above instance seems worthy of some consideration until more is known of the breeding range of *Porzana noveboracensis*.— F. B. McKechnie, *Ponkapog, Mass.*

The White-rumped Sandpiper in Wayne Co., Michigan.— I added the White-rumped Sandpiper (*Actodromas fuscicollis*) to the county list by securing a specimen May 20, 1906, on P. C. 50, Ecorse Township. This was badly shot and could not be saved so I returned June 3 and

saw about 40 of the birds. They were in two flocks and flew in such a compact body that it was impossible to pick out a single bird; consequently one discharge of the gun brought down seven. Despite the scarcity of records this is really a common species in eastern Michigan, according to my experience. For six years, beginning with 1897, my autumn vacations were spent on the lake shore near Port Austin, Huron County, and here this sandpiper was present in unvarying abundance and long after all other waders had retreated south with the exception of the Sanderling and Black-bellied Plover.— J. CLAIRE WOOD, *Detroit, Michigan.*

An Eskimo Curlew Captured at Sea.—It may be of interest to note that when the S. S. 'Baltic' was about half way between Ireland and Newfoundland, on May 26, 1906, an Eskimo Curlew (*Numenius borealis*) came on board. To be more accurate, at noon on that day the ship's position was Lat. 49° 06′ North, Long. 27° 28′ West; the bird came on board at perhaps 2 or 3 P. M. It gave evidence, which was noticed by at least one other passenger, of having eaten within a few hours. Being evidently fatigued, it was finally caught by one of the steerage passengers, and confined in a cage roughly made from a soap box. It was fed on chopped beef and chicken, and ate heartily, but died a short time before we reached the Sandy Hook Lightship — possibly from too much food and too little exercise.

This curlew finds its way to the British Isles with sufficient frequency to be mentioned in the English handbooks as an occasional visitor.— ROBT. BARBOUR, *Montclair, N. J.*

Contents of the Crop and Gizzard of a Young Ruffed Grouse (*Bonasa umbellus*).— The following is the result of the analysis made by the U. S. Department of Agriculture, of the contents of the crop and gizzard of an immature specimen of this species, captured July 18, 1906:

"3 percent of the food is animal, consisting of the following:

1 Carabid beetle	1 Tettigoniid
1 *Leptura vibex*	8 *Camponotus pennsylvanicus*
8 *Plagiodera armoriciæ*	1 Snail
1 *Pyropyga nigricans*	

"97 percent is vegetable matter made up as follows:

About 105 seeds of touch-me-not (*Impatiens biflora*), 22 %.

About 1750 seeds of blackberry (*Rubus* sp.), 31%.

8 seed pods of violet (*Viola* sp.) containing approximately 25 seeds each, together with 114 free seeds, making in all about 514 seeds of this species, 14%.

About 100 seeds of ground cherry (*Solanum* sp.), 2%.

About 462 seeds of sedge (*Carex* spp.), twelve being in perigynia, 4%.

2 pods of *Juncus* sp. with many seeds, 1%.

About 8 seeds of grass, 2%.

A few seeds of *Oxalis* sp. and a few unidentified, 1%.

Some bits of dead leaves and green browse, the latter probably from touch-me-not, 20%.

"Mineral matter consisting of 2 pebbles, is 2% of the entire bulk."— J. A. WEBER, *New York City.*

Swallow-tailed Flycatcher (*Muscivora forficata*) **in New Brunswick.** — Through the kindness of Mr. W. H. Moore, Scotch Lake, N. B., the Biological Survey has received the first record of the Scissor-tailed Flycatcher in New Brunswick. The bird was shot May 21, 1906, by Mr. G. S. Lacey at Clarendon Station and has been mounted by Emmach Bus of Scotch Lake.— WELLS W. COOKE, *Biological Survey, Washington, D. C.*

Nests and Eggs of the Beardless Flycatcher (*Ornithion imberbe*).— I purchased two sets of Beardless Flycatcher's (*Ornithion imberbe*) eggs of Mr. Gerald B. Thomas of Livermore, Iowa, who spent last spring collecting in British Honduras, Central America.

The type set was taken, with both parent birds, near the Manatee River, British Honduras, May 7, 1906. The set contained two eggs, advanced in incubation. The nest was placed in a small palmetto, 4½ feet from the ground and is composed of palmetto fiber and small weed stems, lined with cottony seed fiber of orchids. The nest is globular, with the entrance at the side.

The ground color of the eggs is white. They are spotted with lilac and dark and reddish brown about the crown, forming a ring. They resemble the eggs of *Dendroica pensylvanica*. The measurements are as follows: .66 × .48, .66 × .47 inches.

Set No. 2. This set was found May 16, 1906, about two miles distant from the place where the first set was taken. It contained two eggs, too far advanced to blow. The nest is made of palmetto fibers and other cottony fibers woven together between the stems of palmetto. It was placed 7 feet from the ground and resembles the type set.

One of the eggs is like the other two of the first set, but the other has more spots over the whole surface and the color is lilac rather than reddish brown. They measure .67 × .48, .68 × .49 inches.

Thomas writes as follows: "The first set of Beardless Flycatchers was taken from a nest in a small palmetto, about 4½ feet from the ground The palmetto was on the edge of quite a clump of its kind and was situated in a flat sandy stretch of low land about five miles from the coast. The nearest fresh water was about two miles away.

"The other nest was in a similar location about two miles from where the type was found. This nest was about 7 feet from the ground and only a few rods from a freshwater creek. Two other nests — old ones — were found and both were built in palmettos, one about 12 feet from the ground and the other about 6 feet.

"The parent birds were very bold and perched within two feet of the nest while I was examining it, continually uttering their clear piping call and ruffing the feathers on their heads into a small crest. The female sat very close and almost allowed herself to be touched before flying."— JOHN E. THAYER, *Lancaster, Mass.*

The Prairie Horned Lark a Summer Resident in Connecticut.— In 'The Auk,' Vol. XXII, July, 1905, I reported having secured a pair of Prairie Horned Larks (*Otocoris alpestris praticola*) on May 25, 1905, at Litchfield, Conn., which were undoubtedly breeding birds and which made the first breeding record for Connecticut. Though no nest has yet been found, there can be no question but that these birds are regular summer residents in the vicinity of Litchfield, and not rare, for they have since been seen quite often both by my cousin, Mr. Harrison Sanford, and myself during the months of April, May, June, July, and August on several of the high ridges in the vicinity of the village.— E. SEYMOUR WOODRUFF, *Litchfield, Conn.*

The Bobolink in Colorado.— The migration and nesting of the Bobolink (*Dolichonyx oryzivorus*), which visits certain portions of Colorado, has always been of no little interest to bird fanciers and students.

The Bobolink was first seen by myself in Rio Blanco County, near Meeker, the county seat, in the late spring and early summer of 1905. I have found them in three localities about six miles apart and in each instance in a low or marshy place, usually six or eight in a place. They are quite quiet if the day is cloudy and could easily be overlooked, but should the sun suddenly appear the birds almost as suddenly fly into the air singing their beautiful little song on the wing. On bright sunshiny days I have always found them in the three places referred to above, viz., Cool Creek, Wilber Ranch, and Harp Ranch on White River. I have never seen the bird in any other place in Rio Blanco County than the three mentioned above.— F. H. HOPKINS, *Meeker, Col.*

Probable Breeding of the White-throated Sparrow in Connecticut.— On June 26, 1906, while tramping through a spruce swamp near Bantam Lake, Litchfield, Conn., I was surprised to hear the song of the white-throated Sparrow (*Zonotrichia albicollis*). I soon found and secured the bird, a male. The date and the fact that the testes were much enlarged makes it almost certain that this bird was breeding there, and if so, the first breeding record for Connecticut. I searched for sometime in hopes of finding his mate and clinching the record, but that I did not find her was not surprising considering the denseness of the thickets of spruce and larch.— E. SEYMOUR WOODRUFF, JR., *Litchfield, Conn.*

A New Song.— Several years ago, at Lakewood, New Jersey, I saw a small bird in the top of a maple on First Street which was singing a song entirely new to me. It was unmusical and very simple, but earnest and

persistent. I cannot suggest it more clearly in syllables than as *Chur, chur, chur, chur, chur.* The commas indicate pauses quite as long as the notes, each of which was about three quarters of a second in duration.

Perched on one of the topmost twigs of the tree, in a crouching attitude, the singer showed little of his form and nothing of his colors. I failed to identify him; and since I soon left Lakewood for the season, for a year the song remained a mystery to me.

The following April I heard it again, issuing from a tree-top within a few yards of the one from which I first heard it. Again I failed to identify the author of it, who kept amongst small branches in the tops of tall trees. After a day or two, however, he began to frequent small trees and shrubs. Then I discovered that he was a Chipping Sparrow.

During the earliest hours of the morning he sang at greater length than at other times. That is to say, the syllable *chur* was repeated a greater number of times before he took a rest. Often it was repeated a dozen times, occasionally even more. At no hour of the day was it uttered less than three times in succession.

This second year I heard the bird daily for several weeks,— until I left Lakewood again. The next year I did not stay at Lakewood late enough in the season to hear him. But early in the fourth spring I heard him there once more.

Direct evidence that a migratory bird — the same individual — has returned to the same locality for several years is not frequently obtainable. Here appears to be such evidence. In the present case, too, the bird returned to the same spot, and was only to be found within an area of about two acres.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Towhee Nesting in Bushes.— On June 12, 1906, I found in Cochituate, a village of the town of Wayland, Mass., a nest built in a sapling white pine, at the top. This nest may have been three feet from the ground. The pine was within twenty feet or so of a submerged bog, but was on a dry strip of thin scrub-growth, very open, within a few feet of an open wood-road. The nest was a rather bulky one made of dry miscellaneous stuff, including dead weed stalks, and was lined entirely with soft dead grass.

It contained two eggs; — palpably those of the Chewink or Towhee Bunting. I was unable to identify the nest and eggs by the presence of the owners, but Towhees were in the neighborhood, and there is no question in my mind as to the accuracy of identification. A few hours later, on the same day, I came to a similar nest, fully as bulky as a robin's, built in the first fork of a rather large red cedar on the edge of an open field bordered by a pine grove. Although shadowed by a taller pine, the cedar was practically in the open. The nest was not concealed by any foliage, but was as openly placed as the nest of a semi-domesticated robin in the low fork of a household apple tree. The nest contained four *indubitable* Towhees' eggs, and was about 5½ feet from the ground. The

parent Towhees soon came to the rescue and by their actions put identification beyond a shadow of question. This was also in Cochituate village, Wayland, Mass.

Mr. Brewster regards this double experience as especially noteworthy in eastern Massachusetts. He believes that a few instances of bush-nesting by Towhees are on record as occurring in central Massachusetts. Personally, through a lifetime of bird experience (off and on) in eastern Massachusetts, I have never met with nor heard of a case of bush or tree-building by the Towhee there. With us of eastern Massachusetts the Towhee has ever been the closest kind of a ground-builder, so far as I know.— FLETCHER OSGOOD, *Chelsea, Mass.*

The Rough-winged Swallow (*Stelgidopteryx serripennis*) **Breeding near Springfield, Mass.**— In the July number of 'The Auk,' I reported the capture of a Rough-winged Swallow at Longmeadow near Springfield. Afterwards, not far from the place where this one was taken, three more were observed, and a pair of these were found to be breeding. The site of the nest was located in a ravine two hundred feet long; washed out a few years ago from a bluff twenty feet above the flood plain of the Connecticut River. This pair were successful in raising their young. I noticed that they flew low and did not pause in their flight, as do the Barn Swallows; they often came to feed their young through the woods adjacent to a portion of the ravine, flying not more than ten feet from the ground.— ROBERT O. MORRIS, *Springfield, Mass.*

The Water-Thrush (*Seiurus noveboracensis*) **Nesting in Rhode Island.** — In April of the present year I was searching through a swamp in Washington County for Red-shouldered Hawks' nests and came upon some uprooted trees in a small area which was very wet and swampy. In looking over one of these stumps I found a last year's nest which from its location gave me a suggestion that a Water-Thrush might have nested there.

On May 20, in company with Mr. John H. Flanagan, I again visited the swamp and upon approaching the spot where I found the old nest I heard a Water-Thrush singing. A search through the swamp was begun for its nest and after examining nearly every stump, I found it with the female sitting closely. We approached within two feet of the nest, thoroughly examining her, and were fully satisfied that it was the Water-Thrush (*Seiurus noveboracensis*). The bird would not leave when we struck the root and only left when I almost touched her with my hand, and flew into a tree within ten feet of us, and all the time we were there she was close by in clear view uttering a sharp chirp and kept her tail in motion like a Spotted Sandpiper's.

There were five eggs, incubated but three or four days. The nest was placed in a cavity in the roots about a foot above the water, which was

two feet deep here. It was very beautifully and compactly built of a dark green moss mixed with its seed stalks, fine rootlets, and a few pieces of dead maple leaves on the bottom. The lining was made of fine white rootlets, each piece about two inches long and which resembled horse hair. The outside was about four inches in diameter and two inches in depth with walls three quarters of an inch thick. We again visited the same locality on June 6 with the hope of finding a second set, but a careful search of every root did not reveal one. Three males were singing a few hundred feet apart and two birds, each in different parts of the swamp, were feeding young, just able to fly, one of which I shot, as I did also a male.

Near my home in South Auburn in former years I have seen the Water-Thrush during the migration in spring as early as May 7, and they have lingered with us until the fifteenth of the month. Probably the birds are mated as soon as they arrive on their breeding ground and commence to build their nest at once, for the first egg was probably laid in this nest by May 12.

This is the first instance of its breeding in Rhode Island, and from the number of birds noted, it now can be called a rare local summer resident, and spring and fall migrant.— HARRY S. HATHAWAY, *South Auburn, R. I.*

A Robin's Nest without Mud.— In the Summer of 1900 or 1901 I noted a Robin on Boston Common building a nest on a linden. No mud was then accessible anywhere on the Common and the Robin had apparently put no mud into this nest. It appeared to be built wholly of the dry trash used by English Sparrows in nest-building. It was some 25 feet up from the ground and could not be closely examined but from all points of view, in bulk and shapelessness as well as in material, it presented the appearance of an English Sparrow's nest of average or a trifle less than average size. If I had not watched the Robin in building it I should have called it an English Sparrow's nest, without hesitation. When first seen, the nest was nearly finished.— FLETCHER OSGOOD, *Chelsea, Mass.*

The Birds of Wyoming: Some Corrections.— Prominent among the earlier articles on Wyoming birds is one published by Dr. Brewer, entitled 'Notes on the birds of Wyoming and Colorado Territories, by C. H. Holden, Jr.; with additional memoranda by C. E. Aiken' (Proc. Boston Soc. Nat. Hist., XV, 1872, pp. 193–210). Although not definitely so stated, the implication is strong that all of these records were made in the vicinity of Sherman, Wyoming. The Holden notes were really taken at this locality, but those of Aiken refer to his experiences in the vicinity of Fountain, Colo., near Colorado Springs. A few months after the issue of this paper, Dr. Coues called attention (Am. Nat., VII, 1873, p. 420) to the true location of the Aiken records, but previous to the discovery by him of the facts of the case, he himself had already incorporated in the manuscript of his 'Birds of the Northwest,' some of the Colorado

records and credited them to Wyoming. Later he neglected to make the necessary changes, and several appear in the printed volume with the wrong localities.

Thirty years later, 'The Birds of Wyoming' was published as Bulletin No. 55 of the Wyoming Experiment Station. Throughout this Bulletin, all of the Holden and Aiken notes are used as pertaining to Wyoming, and in addition some of the erroneous records are copied from 'Birds of the Northwest.'

There are twenty-six species whose standing is not changed by the mistake, and it is only necessary to strike out the words "found by Aiken at Sherman." The records of eighteen other species are more seriously affected.

The quotation under *Myiarchus cinerascens* is one of the Coues mistakes, and so also under the same species, the reference to a note by Aiken on the occurrence in Wyoming of *Myiarchus crinitus*. There never was any such note.

The Aiken record of *Aphelocoma woodhousei* should be omitted, and also one of the Coues records. Two specimens are recorded (Birds of the Northwest, p. 219) as taken in Wyoming, but No. 59864 was really taken in Colorado. The other, No. 61082, was taken October 10, 1870, on the Green River not far from the location of the present town of Green River.

All the Aiken records should be omitted under the following species: *Coccothraustes vespertinus montanus, Carpodacus mexicanus frontalis, Junco hyemalis, Helminthophila celata lutescens, Compsothlypis americana, Sitta pygmæa*, and *Psaltriparus plumbeus*.

The specimens of *Leucosticte tephrocotis* recorded as taken at Sherman were actually secured there, but not by Aiken.

The three species, *Helminthophila virginiæ, Catherpes mexicanus conspersus*, and *Regulus satrapa* are admitted to the list of Wyoming birds on the strength of the Aiken records, and hence so far as these records are concerned should be dropped from the State list. The Cañon Wren has been credited to Wyoming in the latest reviews of the family, but such a statement of range seems to have no valid basis.

The 'Hypothetical List' of the Birds of Wyoming contains four species, that are said to have been recorded by Aiken in Wyoming. Each of these is really a record for Colorado. The Rusty Blackbird of the Hypothetical List is an error of identification by Holden and should have been the Brewer Blackbird.

The statement is made, in treating of *Dendroica auduboni*, that in the 'Birds of Colorado' this species is said to breed above timberline. What is really said is that the species breeds in Colorado from 7,500 to 11,000 feet. The author of the 'Birds of Wyoming' failed to consider that although 11,000 feet is above timberline in Wyoming, it is a thousand feet below timberline in southern Colorado.— WELLS W. COOKE, *Biological Survey, Washington, D. C.*

RECENT LITERATURE.

Brewster's 'The Birds of the Cambridge Region of Massachusetts.'[1] — Mr. Brewster's monograph of 'The Birds of the Cambridge Region' is a quarto volume of 426 pages, and forms No. IV of the 'Memoirs of the Nuttall Ornithological Club.' In thoroughness of research and explicitness of detail it fully meets the high standard naturally anticipated for such a work under such authorship and auspices. The 'Cambridge Region,' as here defined, is subtriangular in outline, with a width near its southern boundary of about 12 miles, and a north-south extension, near its western border, of about 14 miles; the hypothenuse of the triangle has an approximate northwest-southeast trend of about 18 miles. It includes "the entire cities or towns of Cambridge, Watertown, Belmont, ... Arlington, Lexington, and practically the whole of Waltham." The boundaries are thus partly natural — being Charles River on the south, and Stony Brook and Hobbs Brook on the southwest and west — and partly artificial. As explained by the author: "This in effect has been to treat of that territory (and no other) over which ornithologists and collectors, living in or very near Cambridge, have been accustomed to roam during excursions not exceeding a day in duration, and made directly from their homes. It must be confessed that this arrangement was originally dictated quite as much by sentiment as by practical or scientific considerations; — nevertheless it has proved not unsatisfactory on the whole, despite the fact that it has led to some perplexities, and perhaps inconsistencies also."

This limited area is as historic, ornithologically considered, as any locality in America, possibly excepting Philadelphia and its immediate environs. The seventeenth century records of Wood, Morton, and Josselyn have an important significance as indicating the general ornithological conditions obtaining at that early date in portions of Massachusetts immediately adjoining the 'Cambridge Region.' It was in Cambridge that Nuttall wrote his 'Manual,' where for about ten years (1823–1832) he was curator of the Botanic Garden; it was evidently here also that he gathered much of the original matter contained in the 'Manual.' Later (1832–1840) Cambridge was the scene of much careful field work by the three Cabot brothers, and Henry Bryant. "Between 1842 and 1860 they [the birds of Cambridge] also received more or less attention from James Russell Lowell, Thomas M. Brewer, Wilson Flagg, and various successive members of the Harvard Natural History Society, while from 1861 or

[1] Memoirs of the Nuttall Ornithological Club. — No. IV. | — | The Birds of the Cambridge Region of Massachusetts. | By William Brewster. — With four Plates and three Maps. — Cambridge, Mass. Published by the Club. July, 1906.—4to. pp. 1–426, pll. i–vii.

1862 to the present day they have been constantly under the observation of an ever increasing number of ornithologists. Thus," continues the author, "we have knowledge of them extending back over a practically unbroken period of more than seventy years. This, although by no means complete at all points, is sufficient to enable us to trace some of the more important and interesting changes in the local distribution and abundance of many of the species — especially the larger ones — which have taken place during the period just indicated."

For a region so well known for so long a time, and so exhaustively studied by so many observers for the last twenty-five years, it seems a little singular that this should prove to be the first special publication on the birds of Cambridge and its immediate vicinity; the many previously published notes and records relating to it being widely scattered, and having reference mainly to the rarer species. The present monograph is of course based primarily and chiefly upon Mr. Brewster's own observations, covering a period of some forty years; but use has been made of all the hitherto published records; of the unpublished minutes of the Nuttall Ornithological Club, extending back to 1873; and of the personal field notes of a large number of the members of the Club, and of other ornithological friends of the author, which have been placed at his disposal, and which are of course duly accredited in the work.

The work opens without a formal 'table of contents,' — a rather inconvenient omission, and about the only point open to criticism in its otherwise admirable make-up. A 'Preface' of four pages (pp. 2–6) explains the basis and plan of the work, and contains the author's acknowledgments of indebtedness for assistance. An 'Introduction' of nearly 80 pages (pp. 7–84) is followed by the 'Annotated List' (pp. 85–398), the 'Explanation of Plates' (p. 598), and the 'Index' (pp. 401–426).

The Introduction, after a few pages of generalities, takes up the 'Cambridge Region' for treatment in detail by minor localities, beginning with the author's garden, comprising, prior to 1873, about six acres of smooth, gently sloping land, bordered by tall shade trees, and embracing orchards of apple, pear, and peach trees, shrubbery, and mowing fields; later it was reduced to two acres, the other four having been cut up into streets and house lots and built upon. The two periods are compared in respect to the bird population, the two lists of species given being notably in contrast. A list of the birds breeding in 'Norton's Woods,' near the present University Museum, from 1866 to 1874, is furnished by Dr. Walter Woodman, and another for Cambridgeport, in the "late sixties," is contributed by Mr. Henry W. Henshaw. The Charles River Marshes, Mount Auburn, — the Sweet Auburn of early days, and a favorite haunt of Nuttall,— and Fresh Pond, with its swamps and marshes, are all treated at length, with particular reference to their former characteristics and surroundings as contrasted with those of to-day, brought about by man's intervention — the filling in of much of the Back Bay basin, and the transformation of marshes, fields, and woodlands into crowded streets. These pertinent

and exceedingly interesting reminiscences will furnish a fund of grateful information to the local antiquarians of coming generations, and form also a most valuable record of the biologic changes in the region in question during the last half of the nineteenth century.

This historical résumé is followed by a nominal list of the species of the Cambridge Region, under vernacular names, divided into nine groups, according to "the character or status of their occurrence at the present time," as to whether permanent, summer, or winter residents, migrants, of casual occurrence, introduced, or extinct, etc., followed by several pages of comment. Then occur several pages devoted to 'Faunal Changes,' noting the species that have locally increased or decreased, and the known or apparent causes, as the case may be. Those whose local decrease is apparently due to persecution by the House Sparrows are the Least Flycatcher, Purple Finch, Song Sparrow, Indigo-bird, Tree Swallow, House Wren, and Bluebird. Following this are four pages on the 'Introduction of the House Sparrow,' giving a history of its introduction and its subsequent increase, and its influence upon the native bird fauna, including its dispossession methods in the case of the House Wren, Bluebird, and Tree and Eave Swallows, and its forays on the nests of vireos, warblers, and the smaller flycatchers.

Of special interest is the section devoted to 'Early Writers and Ornithologists' (pp. 69–84), including Thomas Morton, William Wood, and John Josselyn among the 'early writers,' and Nuttall, and Samuel and J. Elliot Cabot among the ornithologists. A portrait of Nuttall appropriately forms the frontispiece of the memoir, and nearly six pages are given to a sketch of his life and work. As a botanist Nuttall has been accorded high praise by subsequent botanical authorities, but Mr. Brewster calls his 'Manual' of ornithology, his only book on birds, largely a compilation. "Besides including borrowed statements and quotations for which he gave full credit, and much general matter which he made in a sense his own by re-writing it, he took long passages without acknowledgment and with but comparatively slight verbal changes from Wilson.

"It is not less to be wondered at than regretted that Nuttall should have resorted so freely to this practice At the time of writing his 'Manual' he probably knew less about birds than is generally supposed Indeed it is chiefly to the literary excellence of his 'Manual' that this book owes its enduring popularity His accounts of his own experiences and observations are so very interesting and attractive that one is disappointed only because his book does not contain more of them. He was without question an exceptionally careful and accurate observer of everything which especially attracted his attention. His original descriptions of the habits and actions of birds are invariably good, and his renderings of their songs and call notes rank among the very best that have ever been published.

"It is probable that the period of Nuttall's greatest interest and activity in the field study of birds was that during which he was engaged in writing

the 'Manual,' and that his original contributions to this book are based very largely on observations made in the immediate neighborhood of Cambridge. Indeed the 'local coloring' of much of the matter is unmistakable. Such portions of it as clearly relate to his experience in the Cambridge Region afford testimony of the utmost credibility and value, but these, unfortunately, are too fragmentary and disconnected to give us any very clear idea of what the bird life of Cambridge was in Nuttall's time" (pp. 79–81).

Mr. Brewster's criticisms of his method of borrowing from other authors without rendering due credit are illustrated by examples; but it is rather hard on Nuttall to hold him up for misdeeds that are only too common in other authors of even much more recent date without allusion to the fact that he is not the only sinner among writers of bird books.

The character of the 'Annotated List of Species' may best be stated in the words of the author, who says in his preface: "What I have had chiefly in mind has been to state as definitely as possible the times and seasons when each species has been noted, the numbers in which it has occurred, at long past as well as in very recent times, and the precise character and, in some instances also, situation of its local haunts." Hence "no attempt has been made to give full life histories of the birds," nor anything about their habits and songs except in some cases where mention of "these and kindred matters has seemed essential to a clearer understanding of the reasons governing the local occurrence or distribution of certain species, or desirable for the purpose of rendering commonplace or other tedious details more attractive." He says further: "I have included in their appropriate systematic order (1) birds which are known to have inhabited or visited the Cambridge Region in former times, but which no longer do so; (2) birds which have occurred very near but not actually within its boundaries; (3) birds which have been introduced by the direct agency of man; (4) birds which have been reported only on what appears to be insufficient or inconclusive evidence." The species mentioned that are considered as not "entitled to a present place in the natural fauna of the Region" are indicated by the use of smaller type for the text, which is also enclosed in brackets, and by omitting to number them as a part of the list. The native species of unquestioned present occurrences number 249; the additional species include 2 now extinct, 6 introduced by man's agency, and 19 considered as of doubtful record. The nomenclature, both technical and vernacular, is that of the A. O. U. Check-List, except that in some cases local English names are added, and in the case of the Arctic Horned Owl (pp. 203–205) where it is urged that the name that should be adopted for this subspecies is *subarcticus* Hoy.

In the preface (pp. 5, 6) is discussed the important question of what should be taken as satisfactory evidence for the occurrence of birds at localities where they do not properly belong. The author, very justly we think, does not admit that observation of the living bird is sufficient, and should not "be considered as establishing anything more than possi-

ble or probable occurrence — according to the weight and character of the evidence." There may be exceptions to the rule, as in the case of species of easy recognition, like the Turkey Vulture, Swallow-tailed Kite, and the Cardinal, when reported by persons known to have had previous familiarity with the birds in life. "But on no authority, however good, should a mere field observation of any bird that is really difficult to identify, be taken as establishing an important primal record." This is the basis of the author's rulings in the present paper — a proper and the only safe basis in view of the present day methods of numerous amateur observers, who are too often burdening ornithological literature with ill-advised records.

Lack of space forbids detailed comment on the main text of the work, the 'Annotated List of the Species,' but its general character may be inferred from the excerps already given from the author's preface. For each species, following the technical name, is given usually, in a single line of small type, the general character of its occurrence, followed by three to five lines of small type respecting its 'seasonal occurrence,' in which dates of arrival and departure, and of nesting, are given, varying in character in accordance with the manner of occurrence of the species. Then follows, in larger type, a detailed statement, consisting of a few lines to several pages, as the case may require, in some instances including transcripts from the author's notebooks running back to the later sixties. Many of these local bird histories are of exceeding interest, dealing as they do with the local increase or decrease of various species; while the five pages devoted to so common a bird as the Robin form a most charming bit of local bird lore.

The illustrations consist of three maps,— one of the 'Cambridge Region' of 1906, one of Cambridge at 1635, and one of Fresh Pond and its surroundings as they existed in 1886,— a portrait of Thomas Nuttall, a photogravure of a scene in the Maple Swamp (from a photograph taken by the author in June, 1900), a colored plate, by Fuertes, of *Acanthis brewsteri* (now thought to be probably a hybrid between *Acanthis linaria* and *Spinus pinus*), and a half-tone reproduction of a drawing of the Cabot shooting stand at the outlet of Fresh Pond, in use from about 1832 to 1840.

While relating to only a small area, and prepared with strict reference to the local standpoint, 'The Birds of the Cambridge Region' cannot fail to become a classic in the annals of faunistic ornithology.— J. A. A.

Hellmayr · **On the Birds of the Island of Trinidad**'.[1]— "The present paper is primarily based on the extensive collections made by Mr. André or his collectors in different parts of the island. Besides these series, which amount to upwards of 1500 skins, the Tring Museum received a number

[1] On the Birds of the Island of Trinidad. By C. E. Hellmayr. Novitates Zoologicæ, Vol. XIII, No. 1, February, 1906, pp. 1-60.

of birds collected by Dr. Percy Rendall in the districts of Savannah Grande and Tacarigua" (p. 1). In addition to the collection of Trinidad birds here mentioned the Tring Museum also contains a large number of specimens from Tobago and from the adjoining mainland, Mr. Hellmayr, therefore, being exceptionally well equipped to prepare the discussion of the relationships of the avifaunæ of these islands to one another as well as to that of the continent. Following this discussion, which occupies pages 2 and 3 of his memoir, he presents fully annotated lists of (1) "the species collected by Messrs. André, Percy Rendall and Chapman," (2) a list of the species found on the islands between Trinidad proper and the Paria coast," and (3) a list of those species "the occurrence of which is doubtful or has been wrongly given."

The first part of Mr. Hellmayr's paper is rendered especially valuable by his synoptic treatment of closely related groups having representatives in Trinidad. Here are described under new names *Pachysylvia aurantiifrons saturata, Mionectes oleagineus pallidiventris, Pitangus sulphuratus trinitatis, Dysithamnus affinis andrei, Celeus elegans leotaudi, Piaya cayana insulana,* and *Hydranassa tricolor rufimentum. Cyanerpes cærulea trinitatis* (Bp.) is recognized as a valid form, and *Sclateria* is proposed to replace *Heterocnemis*, preoccupied. *Chlorospingus leotaudi* Chapm. is shown to be the female of *Tachyphonus luctuosus* and *Lanio lawrencei* Scl. is considered to be an immature male of the same species; an "unfortunate" instance, as Mr. Hellmayr remarks, of one bird having been referred to three different genera, and at the same time an interesting comment on the nature of 'generic' characters in the class Aves.

Mr. Hellmayr's 'Hypothetical List' would have been more correct if he had examined Chapman's 'Further Notes on Trinidad Birds',[1] a paper which he seems not to have seen. In it he will find that *Piranga hæmalea* was included in Chapman's list on the basis of a captured specimen, the identity of which had since been confirmed by Mr. Ridgway, that of *Chætura cinereicauda*, omitted by Hellmayr, eight examples were taken, and that of *Chætura spinicauda*, the occurrence of which in Trinidad Hellmayr "greatly doubts," five specimens were secured. We may here also call attention to the *lapsus* in this 'Hypothetical List' of *Carduelis* (p. 58) for *Cardinalis*.— F. M. C.

Cherrie on Birds Collected in Trinidad.[2] — Although Mr. Cherrie collected in Trinidad only eight days (March 14–25, 1905) he secured specimens of three species not previously recorded from the island, one of which is described as new under the name of *Attila wightii*, while the others are

[1] Bull. Am. Mus. Nat. Hist., VII, 1895, pp. 321–326.

[2] Species of Birds Collected at St. Matthews Cocoa Estate, Heights of Aripo, Trinidad. By Geo. K. Cherrie. Science Bulletin [no number] of the Museum of the Brooklyn Institute of Arts and Sciences, pp. 1–6, issued June, 1906.

identified as *Chætura fumosa* and *Geotrygon venezuelensis*. Probably, however, the last named is equivalent to *Geotrygon linearis* of Léotaud's list.

Mr. Cherrie questions Hellmayr's reference of the Trinidad *Pachyrhamphus* to *niger cinereiventris*, considering it to be nearer *niger* or possibly separable, but confirms Hellmayr's recognition of a Trinidad form of *Pitangus derbianus*, which, indeed, Cherrie had already described in manuscript when Hellmayr's valuable paper appeared.— F. M. C.

Report on the Immigration of Birds in England and Wales in the Spring of 1905.— The British Ornithologists' Club, at a meeting held December 14, 1904, appointed a Committee, consisting of six members of the Club, with Dr. T. G. Penrose as chairman and Mr. J. L. Bonhote as secretary, to collect and collate evidence regarding the movements of the common migratory British birds, the investigation to be limited at first to England and Wales. The report of the Committee is published as Volume XVII of the 'Bulletin of the British Ornithologists' Club' (8vo, pp. 127, February, 1906), and is entitled 'Report on the Immigration of Summer Residents in the Spring of 1905.' An introduction of ten pages explains the method of conducting the work, which it is hoped will be carried on for a number of years, and a statement of certain general facts regarding the routes and manner of arrival of the species observed. Then follow special reports upon each of the 29 species here treated, with separate maps for each on which are plotted the localities and dates of observation. There is also a map showing all the points at which observations were made. The facts of observation are thus presented in detail in the text and graphically on the maps. An attempt is made to trace "when and where the birds entered the country, how they dispersed themselves over it, when they reached their breeding places, and, finally, how some of them passed through, and out of, the country." It is recognized that the results arrived at in a single year are only approximate, and hence no attempt is made to generalize from them to any great extent. If, however, the work should be continued for a series of years, as is contemplated, it is evident that a correct idea of the normal movements of birds within this area will be obtainable.— J. A. A.

A Hand-List of the Birds of the Philippine Islands.— This valuable work, by Richard C. McGregor and Dean C. Worcester,[1] on the plan of Dr. Sharpe's British Museum 'Hand-List of Birds,' is a most welcome and useful contribution to Philippine ornithology. The 'Hand-List'

[1] A Hand-List of the Birds of the Philippine Islands. By Richard C. McGregor and Dean C. Worcester. No. 36.— January, 1906. Department of the Interior. Bureau of Government Laboratories. Manila: Bureau of Printing. 1906.— Large 8vo, pp. 123.

gives, in systematic sequence, a list of all the birds hitherto known to occur in the Philippine Islands, numbering 692 species, with references to the place of description in the British Museum 'Catalogue of Birds,' or elsewhere as the case may require, and states the known distribution of each species within the Archipelago. In the case of species having an extralimital range, this is first given in general terms, followed by the Philippine range, giving a list of all the islands where the species has been found to occur, as is done in the case of species restricted to the Archipelago.

The 'Introduction,' by Prof. Worcester, after stating the origin, scope, and general character of the work, gives a summary of the authors' conclusions relative to the zoölogical relationships of the islands, which are divided into twelve "zoölogically distinct groups," each of which "has its highly characteristic species and forms a fairly natural division."

The preparation of the Hand-List was begun by Prof. Worcester some four years (now five years) ago, but was "little more than begun" when the services of Mr. Richard C. McGregor were secured as collector of natural history specimens, to whom the work was turned over. "It is only fair to Mr. McGregor," says Prof. Worcester, "to say that from that time until August 15, 1905, on which date he left for a well-earned rest in the United States, most of the work upon the Hand-List was performed by him. My own subsequent connection with it has been confined to consultation with him on doubtful points and the final editing of the manuscript."

The arrangement as regards sequence of families is that of Sharpe's 'Hand-List,' as far as published (Vols. I–IV), the remaining families[1] following the arrangement recently proposed by Dr. Shufeldt. Naturally great care has been exercised in the preparation of the list, no species having "been recorded definitely from any island except upon authority believed to be unimpeachable." It is proposed to publish addenda from time to time, as new information comes to hand, until sufficient matter has been accumulated to justify the revision of the entire list. The work is furnished with two indexes, one for the genera and species, the other for the higher groups.

It remains for us to extend to the authors our hearty congratulations for the evident thoroughness of preparation and the early appearance of this useful key to the ornithology of our possessions in the far East, which constitute a region of exceptional zoölogical interest.— J. A. A.

Oberholser's Revision of the Genus Collocalia.[2] — This interesting genus of Swifts is one of the most difficult in the entire family Micropodidæ. In this detailed study of the group Mr. Oberholser recognizes 32 forms —

[1] A family heading for *Oriolus* (p. 106) appears to have been accidentally omitted.

[2] A Monograph of the Genus *Collocalia*. By Harry C. Oberholser. Proc. Acad. Nat. Sciences of Philadelphia, Vol. LVIII, Part 1, 1906, pp. 177–212.

21 species and 11 additional subspecies, of which 4 species and 6 subspecies are described as new. The group is divided into two subgenera, *Collocalia*, with the tarsus entirely unfeathered, and *Aerodramus* (subgen. nov.), with the tarsus more or less feathered. This is the sole character separating the groups, and while very marked in some species is "sometimes difficult to appreciate." The material on which this investigation is based — 159 specimens — is principally of recent collection, and represents very nearly all the recognized forms. An elaborate key to the species and subspecies facilitates their determination.— J. A. A.

New Names for North American Birds.— Mr. Oberholser claims[1] to have discovered an earlier name for Brewster's *Melospiza lincolnii striata* in *Emberiza* (*Zonotrichia*) *gracilis* Kittlitz, published in 1858 and based on specimens from Sitka, Alaska. The two-line description, so far as it goes, seems to point to this bird rather than to either of the other small sparrows of that locality.

He also proposes[2] to adopt *funerea* in place of *ulula* for the European Hawk Owl, as both names admittedly refer to the same species, and *ulula* stands first on the page. The names of the two forms will thus stand as *Surnia funerea funerea* (Linn.) and *S. f. caparoch* (Müll.).

An earlier name for the Scarlet Tanager, he states,[3] is found in *Loxia mexicana* Linn., so that this species should stand as *Piranga mexicana* (Linn.).

Mr. Bangs has also wrestled anew with the old question of the technical names of the Passenger Pigeon and the Mourning Dove.[4] In the tenth edition of his 'Systema Naturæ' (1758) Linnæus described a pigeon as *Columba macroura*, based on references to both the Mourning Dove (plate 15 of Edwards) and the Passenger Pigeon (plate 25 of Catesby); but Mr. Bangs shows that Linnæus took his brief diagnosis and habitat from Catesby's plate and description of the Passenger Pigeon, for which the name *macroura* is hence to be retained, although of late currently applied to the Mourning Dove. The name for the latter must therefore be taken from Linnæus's twelfth edition (1766), where the name *macroura* is abandoned and the two species are each provided with wholly new names, the Passenger Pigeon being called *Columba migratoria* and the Mourning Dove *Columba carolinensis*. At the same time, the reference to Edwards (the West Indian form of the Mourning Dove) is made the basis of a third species, named *Columba maryinata*, which antedates the name *bella* recently given to this race by Palmer and Riley. The names of these birds thus

[1] An Earlier Name for *Melospiza lincolnii striata*. By Harry C. Oberholser. Proc. Biol. Soc. Washington, XIX, p. 42, Feb. 26, 1906.

[2] The Specific Name of the Hawk Owls. *Ibid.*, pp. 42, 43.

[3] *Piranga erythromelas* versus *Piranga mexicana*. *Ibid.* p. 43.

[4] The Names of the Passenger Pigeon and the Mourning Dove. By Outram Bangs. *Ibid.*, pp. 43, 44.

become, respectively, *Ectopistes macroura* (Linn.), *Zenaidura carolinensis* (Linn.), and *Z. c. marginata* (Linn.). Unfortunate as is this transposition of names, it seems to be a clear case, based on the correct application of sound and generally accepted rules of nomenclature. As the first citation by Linnæus under *Columba macroura* was Edwards's figure and account of the West Indian form of the Mourning Dove, it was natural, in less exacting times, to fix the name on the Mourning Dove, as being the first species mentioned, rather than on the Passenger Pigeon; but of late, in delimiting an early composite species, it is proper, and has become customary, to restrict the name to that part of the composite most clearly indicated by the diagnosis, which in this case is beyond question the Passenger Pigeon.— J. A. A.

Howell on 'Birds that Eat the Cotton Boll Weevil.' — Investigations conducted by the U. S. Department of Agriculture in an effort to control the ravages of the cotton boll weevil include the relation of birds to the weevil. This work was begun in Texas in the autumn of 1904, and continued during the summer of 1905. A recently issued Biological Survey 'Bulletin' contains a further report of progress (for notice of the first report see *antea*, p. 119) by Mr. Howell,[1] based on the examination of the stomachs of birds collected in Texas during July to October, 1905. Of the 62 species examined, 12 were found to have eaten boll weevils. In all 28 species have been found to feed on the weevil, of which the orioles, blackbirds, meadowlarks, and the killdeer are among the most important. "Birds," it is said, "are not the least important of the boll weevil's natural enemies, and every species ascertained to feed on it should be protected at all times and places, not only in the cotton-producing area, but along their migration routes." Attention is called to the fact that a number of species that prey upon the weevil are not at the present time protected in Texas.— J. A. A.

Palmer on Federal Game Protection.— Dr. T. S. Palmer, Assistant in Charge of Game Protection, Biological Survey, has given a concise history of Federal Game Protection in the United States,[2] with especial reference to the first five years of the twentieth century. Prior to the year 1900 the Federal Government had done comparatively little for the protection of game, and nothing for the prevention of the introduction of noxious animals and birds from foreign countries, nor for the regulation of interstate commerce in game, and very little for the protection of game in national parks and reservations. Many of the individual States had

[1] Birds that Eat the Cotton Boll Weevil — a Report of Progress. By Arthur H. Howell. U. S. Department of Agriculture. Biological Survey, No. 25, Washington, Government Printing Office, 1906.— 8vo, pp. 22.

[2] Federal Game Protection — A Five Years' Retrospect. Yearbook of Department of Agriculture for 1905, pp. 541–562.

passed efficient game and bird protection laws, and through cases arising under them the United States Supreme Court had decided important points affecting the rights of States in the protection of game. Among them is the case of Geer *vs.* Connecticut, in 1896, in which the Supreme Court rendered a decision that maintained that game was the property of the State and not of the individual citizens on whose land it might be found, and that the State could protect its game by legislation in any manner it might see fit, even to the prohibition of its export to other States. "This decision," says Dr. Palmer, "gave a new impetus to game legislation throughout the country and encouraged the States to incorporate non-export provisions in their laws."

The first important Federal law for the protection of game, well-known as the Lacey Act, went into effect May 25, 1900, and was the beginning of a new era in Federal game protection. Its origin and history, and the provisions of its five sections, are here briefly stated. Since 1900 four acts relating to game protection have been passed by Congress, each having reference to special features of game protection or to special areas, as the District of Columbia, Alaska, and the establishment of a game refuge in Oklahoma.

The topics especially treated in the present paper, besides the Lacey Act, are the importation of foreign birds and mammals; interstate commerce in game; the dissemination by the Biological Survey of information concerning game protection, and "the propagation, uses, and preservation of birds"; recent Federal legislation; Federal coöperation with State officials in the enforcement of game-protective laws, and with Audubon Societies in the protection of nongame birds; and an account of the various Federal game preserves, eleven in number, of which eight have been established since 1900. Thirteen text-illustrations, in the form of small maps, show diagrammatically the progress of various important features of game protection during the last five years.

The great importance of the Lacey Act, or the Federal law of 1900, as an agency in game protection cannot well be over estimated. Its enactment "infused new life into State laws and made possible the enforcement of provisions which previously had been of little effect. When its operation began to be felt the changed conditions caused shippers to seek means by which they could continue their trade undisturbed. Every advantage was taken of defects in State laws, and various devices, technical or otherwise, were adopted to evade the provisions of the Federal law requiring the marking of packages. Quail and other game birds were concealed in trunks, barrels, egg-cases, and similar misleading packages, and were marked 'butter,' 'dressed poultry,' or 'household goods.' Special shipping tags were devised for the purpose of concealing the identity of the shipper and minimizing the risk which he assumed in forwarding the shipments to market, but these devices have been rendered more and more futile. All the States in the Union except Mississippi now prohibit export, and several of them have stopped the sale of all or certain kinds of game.

Stringent laws prohibiting sale and shipment have been enacted in Missouri and Nebraska. These and the equally sweeping legislation of Michigan, Minnesota, and Wisconsin can be and are rigidly enforced through the coöperative influence of the Federal law and the support their enforcement secures from the strong public sentiment that caused their adoption. In Chicago alone thousands of birds illegally shipped have been seized, and from the evidence thus secured many of the shippers in other States have been brought to justice. Under the Federal law more than 50 convictions have been secured, and in nearly half of these cases fines of $100 or more have been imposed. In each of three cases they amounted to $150, in two to $200, and in two others to $400."

It is only a few years since the rapid annual decrease of game birds in general and of certain species of nongame birds began to attract general attention; the ornithologists of the country and a few sportsmen interested in the preservation of game alone foresaw the doom speedily awaiting many species of our most desirable birds unless measures were promptly taken to check the slaughter waged by market gunners and the milliner's emissaries. The campaign of education, instigated and directed largely by members of the American Ornithologists' Union, has resulted in the rapid growth of a healthy public sentiment in respect to bird preservation, rendering it possible to secure the enforcement as well as enactment of efficient State and Federal laws before such action became too late to be effective. As shown by Dr. Palmer's recital of present conditions, the crisis in game protection is apparently passed and the outlook eminently hopeful.— J. A. A.

Game Protection in 1905.— Dr. Palmer's report on 'Game Protection in 1905'[1] treats of legislation, decisions of courts, administration and enforcement of laws, condition of game, feeding game, importations of live mammals and birds, and game preserves. The year 1905 was "chiefly noteworthy for volume of legislation, more effective enforcement of laws, and experimental and practical work in maintaining and increasing the stock of game." Substantial progress was made in solving the problem of restricting hunting by unnaturalized foreign-born residents, the closing of the game markets of Kansas City and St. Louis, the systematic feeding of game, and the importation of several promising species of game birds, as the introduction of the Gray Partridge, Capercalzie, and the Black Game, chiefly to Grand Island, Michigan, and of Mexican quail into North Carolina and Massachusetts. More attention is given to game preserves by several different States, and several bird reservations were set aside during the year by the United States.— J. A. A.

[1] Game Protection in 1905. By T. S. Palmer, Assistant, Biological Survey. Yearbook of U. S. Depart. of Agric. for 1905, pp. 611–617.

Miller on Birds from Southern Sinaloa.[1] — This paper is an account of the birds collected for the American Museum of Natural History by Mr. J. H. Batty in the coast and foothill region of Southern Sinaloa, Mexico, December 8, 1903, to November 5, 1904. From the several localities visited, ranging in altitude from 50 to 5500 feet, Mr. Batty obtained a total of 1164 specimens, representing 160 species and subspecies. As we should expect, the list indicates that the resident avifauna of this region is mostly southwest Mexican; but there appear many migrants from the north, the most notable of these, perhaps, *Cyanospiza cyanea*.

Mr. Miller, in a brief introduction, gives various details concerning the physiography of the region, and follows with a well annotated list of all the forms represented in the collection. An important feature is Mr. Batty's often extended notes on the colors of the soft parts as well as on nesting and other habits. The various critical notes concern principally zoölogical points, and in some cases are of considerable interest. The unique *Iache magica* proves to be but an abnormal plumage of *Iache latirostris*; and *Glaucidium phalænoides* is divided into two races, for the northernmost of which the name *Glaucidium phalænoides ridgwayi* Sharpe is used. Two new subspecies are described: — *Amizilis beryllina viola* from Jalpa, Sonora, and of somewhat doubtful validity; and *Amazona albifrons nana*, a depauperate form from Yucatan.— H. C. O.

Miller on Birds from Northwestern Durango.[2]— During most of 1903 — from January 19 to November 26 — Mr. J. H. Batty collected birds for the American Museum of Natural History in northwestern Durango, at various localities ranging in altitude from 2500 to 8500 feet. Mr Miller refers the 829 specimens to 132 forms, and as in his previous paper on Mr. Batty's collections, adds the collector's data regarding habits, colors of bill, feet, etc., together with various critical comments of his own, which, although relating to no new forms, are in many cases noteworthy. The relationships of *Icterus abeillei* are discussed at length, and the apparently correct conclusion reached that it is a subspecies of *Icterus bullocki*. The *Progne subis* of Arizona and western Texas is referred unconditionally to *Progne subis hesperia*, but after an examination of specimens we are obliged to dissent from this opinion, since the lower tail-coverts are not the only character worth considering, and the birds, while intermediate, are nearer the typical race. The range of *Petrochelidon lunifrons tachina* is extended west to Fort Verde, Arizona, on

[1] List of Birds Collected in Southern Sinaloa, Mexico, by J. H. Batty, during 1903–1904. By Waldron De Witt Miller. Bulletin Amer. Mus. Nat. Hist., XXI, 1905, pp. 339–369.

[2] List of Birds Collected in Northwestern Durango, Mexico, by J. H. Batty during 1903. By Waldron De Witt Miller. Bulletin Amer. Mus. Nat. Hist., XXII, 1906, pp. 161–183.

the strength of some intermediates between *Petrochelidon l. lunifrons* and *P. l. melanogastra*.

According to Mr. Miller, several of the resident birds treated are almost exactly intermediate between subspecies of the southwestern United States and their representatives in Central Mexico, making determination difficult. There are also many northern immigrants in the list. Catalogues such as this are of much value to the student of geographical distribution, as well as to others, particularly when the identifications are made with the care that these seem to have been.— H. C. O.

CORRESPONDENCE.

The Speed of Birds.

EDITORS OF THE AUK':—

Dear Sirs:— The enormous discrepancy between the speed assigned to small birds by those who have observed them at night, through telescopes, and the speed these same birds exhibit on ordinary occasions seems to require some explanation. Those who have watched birds from a train are well aware that a train moving from thirty to forty miles an hour will pass most of the small birds that chance to be flying in the same direction, while trains traveling not over fifty miles an hour have been noted as being faster than ducks. Ducks are celebrated for the speed of their flight, and among them the Old Squaw is especially rapid; and yet the noted speed of ducks is from forty to sixty miles an hour, and the most enthusiastic gunner would hardly credit a Quandy going down wind with more than seventy-five miles an hour. Homing Pigeons are exceptionally fast flyers and yet in 1901 the record for young birds flying a distance of 150 miles was made by a score of 5346 feet per minute. That this is extremely rapid is shown by records of 2207 and 3249 feet per minute for distances of from 110 to 150 miles, the number of birds participating being from 117 to 269. In view of these facts one may be pardoned for suspecting some error in calculations that ascribe a speed of one hundred and thirty miles per hour to small birds.

Very respectfully,

F. A. LUCAS.

The Supposed Types in the Lafresnaye Collection.

To the Editors of 'The Auk':—

Dear Sirs: — The last number of 'The Auk,' Vol. XXIII, pp. 351–353, contains a review of our paper on the Passeres Tracheophones in the Paris Museum. Some criticisms referring to our statement about the supposed types in the Lafresnaye collection (now in Boston) necessitate a few remarks of ours.

First of all, we should like to say that we never thought of denying the existence of types in the Lafresnaye collection, for we are — as every ornithologist ought to be — well aware of the fact that Lafresnaye described a good many species "without any association with D'Orbigny" the undoubted types of which are certainly preserved in the Museum of the Boston Society of Natural History. Moreover, it is evident from what we said in the introduction to our study, that the remarks to which Dr. Allen (*l. c.* p. 352, note) took exception, relate only to those species which were described by Lafresnaye and D'Orbigny in their joint papers in the 'Magasin de Zoologie' for 1837 and 1838. With regard to these, there is no doubt that the examples in the Paris Museum are to be considered as the actual types, as will be shown in the following lines.

Dr. Allen's supposition that not many of them were indicated as such by the authors of the species they are alleged to represent is altogether erroneous. On the contrary, nearly every specimen of D'Orbigny's collection — as far as the mounted birds are concerned — bears, on the bottom of the stand, the note "type de la description l. c." in D'Orbigny's own handwriting, and in every particular instance, the exact locality, date of capture, number of the collector and the Latin name under which it was mentioned in D'Orbigny's writing, are carefully indicated.

On the other hand, it appears that the so-called "types" of Lafresnaye and D'Orbigny in the Boston Museum have been labelled as such *not* by Lafresnaye himself, but by Verreaux,[1] and that many of them are without any indication of locality[2] and collector. Dr. Allen informs us that it was Jules Verreaux who catalogued the Lafresnaye collection, and adds that he was "an excellent ornithologist, capable of doing the work with proper discrimination through previous familiarity with its contents." We are sorry to say that the work does not give him much credit as it must have been executed in a rather cursory way. This will be illustrated by the following instances.

In the 'Bulletin of the American Museum of Natural History,' Vol. II, 1889, p. 243, Dr. Allen declares *Synallaxis frontalis* Pelz. to be synonymous with *S. azaræ* D'Orb., basing his conclusions upon *three* specimens in

[1] Cfr. Salvin, Ibis, 1874, p. 321.

[2] This is suggested by Dr. Allen's remark on two specimens of *Cinclodes* (Bull. Amer. Mus. N. H., II, 1889, p. 89).

the Lafresnaye collection, marked "*Synallaxis azaræ Lafr. et D'Orb. type.*" First of all, this species has never been described by Lafresnaye, but by D'Orbigny (Voyage, Oiseaux, p. 246) who expressly says that he collected only a single specimen of the bird for which the name *S. azaræ* was suggested if it should turn out to represent a distinct species. This very example being still in the Paris Museum (cfr. Mém. Soc. Hist. nat. Autun, XIX, p. 70), how can there be *three* types in the Boston Museum? Furthermore, it must be understood that *S. frontalis* is not known to occur anywhere in Bolivia — the specimens from that country, mentioned by Dr. Sclater, Cat. Birds Brit. Mus., XV, p. 41, belong to *S. griseiventris* Allen — though the species might yet be discovered in the plains of the East, as it is found in the adjoining Brasilian State of Mattogrosso. The Paris Museum does not possess any specimens from Moxos (one of D'Orbigny's localities for his '*S. ruficapilla*'), but there are two collected in the Argentine province of Corrientes which are, indeed, referable to *S. frontalis*. It is, therefore, more than probable that the supposed types in the Boston Society's Museum, if at all collected by D.Orbigny, came also from this locality. Unfortunately, Dr. Allen does not inform us where and by whom they were obtained.

In the same periodical, p. 206, Dr. Allen asserts that *Muscicapa olivacea* Lafr. et D.Orb. (= *Muscicapara boliviana* D'Orb.),[1] according to the type (no. 4686 Lafr. coll.), "is certainly the same as the bird commonly recognized as *Elainea obscura.*" In the Paris Museum, there are two well-preserved skins with D'Orbigny's original labels which, in his own handwriting, bear the inscription: "No. 158, D'Orbigny, 1834. Yungas. Muscicapara boliviana D'Orb.— D. 219." These birds have nothing whatever to do with *Elainea obscura*, being about half as big, but represent a species of *Tyranniscus* which, in 1873, was redescribed by Mr. Sclater under the name of *T. viridissimus*. One of us confronted the types of the two species and found them perfectly alike. The dimensions given by D'Orbigny (Voyage, Ois., p. 328: wing 55; tail 44; total length 128 mm.) alone, are sufficient to prove that his account can only refer to the *Tyranniscus*. It follows that the specimen of *Elainea obscura* in the Boston Museum is quite incorrectly labelled as the type of *M. boliviana*.

As a third example may be cited the following. According to Mr. Ridgway (Proc. U. S. Nat. Mus., X, pp. 494, 495) there are two so-called "types" of *Dendrocincla merula* "Lafr." in the Lafresnaye collection. One of them proved to belong to the species in question while the other was found to represent a widely different form, viz. *Dendrocincla olivacea lafresnayei* Ridgw. As a matter of fact, however, neither of them can be the type of *D. merula* which was described, as long ago as 1820, by Lichten-

[1] As a curiosity it may be mentioned here that these two references occur three times in Vol. XIV of the Cat. Birds Brit. Museum. First in the synonymy of *Phyllomyias brevirostris* (p. 121), secondly as the original descriptions of *Tyranniscus bolivianus* (p. 134), and thirdly as doubtful synonyms of *Elainea obscura* (p. 152)!!!

stein from a Cayenne specimen in the Berlin Museum where it has been examined by one of us. Our remark [1]: "quelques-uns de ces types, perdus au milieu d'une masse de spécimens, ne portaient que les indications du voyageur, sans nom scientifique" refers to some of D'Orbigny's *skins* on the labels of which *no* Latin name was to be found.[2] Among the Tracheophonæ there were but four such specimens which, however, we had no difficulty in ascertaining to be the types of *Anabates ruficaudatus*, *A. gutturalis*, *A. certhioides* and *Upucerthia nigrofumosa*. Our reasons for these identifications are fully explained *l. c.*

It remains to say a few words about the birds described by Lafresnaye alone, and by O. des Murs, which are dealt with in our paper. First, it must be remembered that the whole collection of Count Castelnau's expedition to South America was deposited in the Paris Museum where, consequently, all the types of the 'Voyage dans l'Amérique du Sud' remained. It is, therefore, rather strange that those of *Dendrornis weddellii* Des Murs (*not* Lafresnaye) should be in the Boston Museum, yet Mr. Elliot (Auk, 1890, p. 169) goes even so far as to say: "I do not mean to argue that *D. weddellii* is not represented in the Paris Museum, but I doubt very much if any specimen there is rightly labelled as the type of the species." This statement is made on account of there being two mounted birds in the Lafresnaye collection labelled as types! Against this, we have to say that the Paris Museum possesses two adult birds of *D. weddellii* which are marked by Des Murs himself — the actual describer of the species — as "les types de la description dans l'ouvrage de M. Castelnau, p. 46." There can, therefore, be no question whatever as to which specimens are the *real types*. It does not seem to be at all certain that the examples in the Lafresnaye collection were obtained by Castelnau's expedition, and unfortunately Mr. Elliot does not inform us about this all-important point.

Of the species described by Lafresnaye alone three, namely: *Dendrexetastes devillei*, *Dendrornis dorbignyana* and *Xiphocolaptes simpliciceps* need no further comment, being accredited in the original descriptions to the Paris Museum. *Sittasomus amazonus* is said to have been discovered by Count Castelnau. Moreover, on the stand of both specimens in the French National Collection, there is a note from Des Murs' hand: "cet exemplaire portait de la main de M. de Lafresnaye *Sittasomus amazonus* Lafr. *Type*." The same applies to *Dendrornis obsoleta multiguttata* (Lafr.).

With regard to *Nasica guttatoides*, we refer the reader to the account in the Mémoires Soc. Hist. Nat. Autun, XIX, p. 99, where our reasons for considering the specimen from the Castelnau expedition as the type, are explicitly stated, and we cannot admit that it has only been incidentally mentioned by Lafresnaye, as the locality Lorette is given in the first

[1] Bull. Mus. Hist. Nat. Paris, 1905, p. 373.

[2] D'Orbigny's original labels are, with a very few exceptions, still attached to the skins.

place. It is, however, of very little importance whether the real type is in Paris or in Boston, for we have, we think, conclusively shown that the specimens with a short, blackish bill are but the young of the long-billed *D. rostripallens*. That Mr. Elliot did not recognize the example in the Lafresnaye collection as a young bird, is not at all surprising as his material, when writing the review of the genus *Dendrornis*, was evidently altogether unsatisfactory.

It is, we believe, sufficiently demonstrated in the foregoing lines that the labelling of the Lafresnaye collection has *not* been done with proper discrimination [1]), and from the fact that specimens are marked "types," it does not always follow that they are really entitled to be considered as such. We may conclude these remarks by saying that we have not been led by the intention "of disparaging the good name of another institution," but we deemed it a duty to call attention to obvious errors, in order to prevent in future similar mistakes as those which have resulted from wrongly labelled specimens in the case of *Synallaxis azaræ* and *Muscicapara boliviana*. We express the hope that our American fellow-workers will take up the matter and that they may enlighten us about the way in which the supposed types in the Lafresnaye collection are labelled, by whom they are marked as types, and about the exact data on the original labels of the collectors if such are extant, as we propose to do shortly in a paper on the specimens in the Paris Museum.

Very truly yours,

Dr. A. Ménégaux,
C. E. Hellmayr.

[The foregoing communication from the authors of the 'Passeres Tracheophones' of the Paris Museum of Natural History is a most welcome contribution to the pages of 'The Auk.' Had the explicit information now conveyed been given in the introduction to the series of papers reviewed in the preceding issue of this Journal (*antea*, p. 351) there would have been no basis for the strictures referred to above. As a result of them we have now information all ornithologists interested in the South American ornis will be grateful for, presented as it is in such a commendable spirit.

It is to be hoped that some one fully equipped for the task will soon go over the types in the Lafresnaye Collection in the Boston Society of Natural History and make known their real status and history, so far as may be possible.— J. A. A.]

[1] Cfr. also Salvin's remarks in 'The Ibis,' 1874, p. 321.

NOTES AND NEWS.

HENRY BAKER TRISTRAM, Canon of Durham, a Corresponding Fellow of the American Ornithologists' Union, died at his home in Durham, England, March 8, 1906, at the age of 83 years and 10 months. He was born at Eglingham, near Alnwick, May 11, 1822, and was graduated from Lincoln College, Oxford, in 1844, and became Canon of Durham in 1873. He was ordained a deacon in 1845, and a priest in 1846; owing to ill health, "he was ordered abroad, and passed two years (1847–1849) as naval and military chaplain in Bermuda."

In 1855–1857 he spent two winters in Algeria, and in 1858 made his first journey to Palestine, which country he many times revisited, his last visit being made in 1897. Although distinguished as an ornithologist, and especially as an authority on the birds of Palestine, he was also the author of several books of travel and general works on Palestine, including its fauna and flora, geography, geology, etc. But his ornithological interest was not restricted to a single region, as is evidenced by his large general collection of birds, which, when turned over to the Free Public Museums of Liverpool in 1896, numbered 20,000 specimens, referable to 6000 species, and contained 150 types. About the same time his large collection of eggs "was disposed of to the late Philip Crowley, of Waddon House, Croydon," and on Crowley's death, in 1901, became the property of the British Museum. He did not, however, cease collecting, and at the time of his death had amassed a second collection of nearly 6000 specimens, notably rich in oceanic and other rare birds, and which has recently been purchased by the Academy of Natural Sciences of Philadelphia.

Canon Tristram was one of the Founders and original Members of the British Ornithologists' Union, and throughout his subsequent life was a frequent contributor of valuable papers to 'The Ibis,' and to other natural history journals. His principal works, based on his explorations, are 'The Great Sahara: Wanderings South of the Atlas Mountains' (1860); 'The Land of Israel; a Journal of Travels in Palestine, undertaken with special reference to its physical character' (1865); 'The Land of Moab' (1873); 'The Fauna and Flora of Palestine' (1884).

VICTOR FATIO, a Corresponding Fellow of the American Ornithologist's Union, whose death has already been announced in this journal (*antea*, p. 356), was a leading authority on the vertebrate fauna of Switzerland, being the author of the 'Faune des Vertébrés de la Suisse,' the second volume of which, issued in two parts (1800 and 1904) in quarto, and embracing nearly two thousand pages of text and many text illustrations, is devoted to the birds of Switzerland. He was born in Geneva in 1838, and appears to have spent most of his life in Switzerland, where he received his preliminary education, and later studied at the Universities of Berlin

and Leipzig and at the Jardin des Plantes in Paris. His graduating thesis for his degree of Doctor of Philosophy at Leipzig was entitled 'De Avium corpore pneumatico,' and was published in Berlin in 1860. In 1866 he published an extended memoir on the structure and coloration of feathers ('Des diverses modifications dans les Forms et la Coloration des Plumes'). While in some respects it was a valuable contribution to the subject, his conclusions respecting changes of color within the mature feather were based almost wholly on groundless hypotheses.[1] He was for many years president of the Société Ornithologique Suisse, and published many notes and papers in its 'Bulletin,' in the 'Mémoires' of the Société de Physique et d'Histoire Naturelle de Genève, and elsewhere. He was also president of the Swiss Commission on the Phylloxera pest, and devoted much time to its study. He was elected a Foreign Member of the British Ornithologists' Union in 1872, a Corresponding Member of the American Ornithologists' Union in 1884, and of the London Zoölogical Society in 1894. He was also the recipient of many orders and decorations from various European countries, in recognition of his contributions to science.

MRS. EDWARD ROBINS, an Associate of the American Ornithologist's Union, and Secretary of the Pennsylvania Audubon Society, died at her home in Philadelphia, July 2, 1906. In 'Bird-Lore' (VIII, 1906, p. 142) we find the following tribute to her memory:

"To all who knew Mrs. Robins, her work in behalf of birds and animals is familiar. Ten years ago, entirely through her energy, the Pennsylvania Audubon Society was established at a time when only one other organization of the kind was in existence, and she continued actively in charge of its work until failing health compelled her to relinquish it. Mrs. Robins was also active in the Pennsylvania Society for the Prevention of Cruelty to Animals, and was President of the Spencer Baird Ornithological Club.— W. S."

THE July (1906) number of the 'Journal für Ornithologie' contains (pp. 329–358) Herman Schalow's memorial address on the late Dr. Jean Cabanis, which was read at the March session of the Deutchen Ornithologischen Gesellschaft. It is accompanied by a portrait of Cabanis, and a list of his published ornithological writings. The titles number 168, and cover the period 1845 to 1892. The brief annotations consist chiefly of the names of the new genera and species described, the former numbering 216 and the latter 422. One genus and 23 species have been named in Cabanis's honor by other ornithologists. The biography, with its bibliographical supplement, forms a valuable tribute from a devoted pupil to his master.

'THE CONDOR' states (VIII, July, 1906, p. 101) that the Audubon Society of California was organized at Los Angeles, May 31, 1906, with the

[1] *Cf.* Bull. Am. Mus. Nat. Hist., VIII, 1896, pp. 36–38.

following officers: President, David Starr Jordan; Vice-Presidents, Prof. C. F. Holder and Dr. F. W. D' Evelyn; Secretary, W. Scott Way. This State organization will have supervision of the local Audubon societies, and will coöperate with the National Association of Audubon Societies in the work of bird protection.

A BEQUEST of $100,000 has been left to the National Association of Audubon Societies by the will of the late Albert Willcox of New York City, who before his death, August 13, 1906, had been a liberal contributor to the funds of the National Association. The Association is thus provided with greatly needed funds for the more vigorous prosecution of its urgent work, and with the nucleus for a permanent endowment. There is need, however, for further increase of funds, and it is to be hoped that other bequests may follow. The present gift is especially opportune.

THE Seventh International Zoölogical Congress will meet in Boston, Mass., in August or September, 1907, under the presidency of Mr. Alexander Agassiz, according to the announcement made in the preliminary notice issued by the Executive Committee, which says further:

The arrangements for the Seventh Congress are in charge of a committee of the American Society of Zoölogists, consisting of Messrs. Alexander Agassiz, chairman; Samuel Henshaw, secretary; W. K. Brooks, H. C. Bumpus, E. G. Conklin, C. B. Davenport, C. H. Eigenmann, L. O. Howard, D. S. Jordan, J. S. Kingsley, F. R. Lillie, E. L. Mark, C. S. Minot, T. H. Morgan, H. F. Osborn, G. H. Parker, R. Rathbun, J. Reighard, W. E. Ritter, W. T. Sedgwick, C. W. Stiles, A. E. Verrill, C. O. Whitman, E. B. Wilson, and R. R. Wright.

The meetings will open in Boston, where the scientific sessions will be held, and from which excursions will be made to Harvard University and to other points of interest. At the close of the Boston meeting the Congress will proceed to Woods Hole, Massachusetts, visiting the Station of the United States Bureau of Fisheries, the Marine Biological Laboratory, and the collecting grounds of the adjacent seacoast. The journey to New York will be by sea through Long Island Sound. In New York the Congress will be entertained by Columbia University, the American Museum of Natural History, and the New York Zoölogical Society, and excursions will be made to Yale University, to Princeton University, and to the Carnegie Station for Experimental Evolution. From New York the members will proceed to Philadelphia and Washington. Tours will be planned to Niagara Falls, to the Great Lakes, Chicago, and the West. It is hoped that arrangements can be made for reduced transportation for members of the Congress on transatlantic lines and on the American routes.

The first formal circular announcing the preliminary program of the Congress will be issued in October, 1906.

The Executive Committee is as follows: G. H. Parker, Chairman; Sam-

uel Henshaw, Secretary; L. O. Howard, J. S. Kingsley, E. L. Mark, H. F. Osborn. All inquiries should be addressed to G. H. Parker, Seventh International Zoölogical Congress, Cambridge, Mass.

THE annual meeting of the Maine Ornithological Society will be held at the rooms of the Portland Society of Natural History, Portland, Maine, "on Friday and Saturday following Thanksgiving day."

THE TWENTY-FOURTH ANNUAL CONGRESS of the American Ornithologists' Union will be held at the U. S. National Museum, Washington, D. C., beginning on the evening of Monday, November 12, 1906. The evening session will be for the election of officers and members, and for the transaction of routine business, and action on proposed amendments to the By-Laws. Tuesday and the following days of the session will be for the presentation and discussion of scientific papers, and will be open to the public. Members intending to present communications are requested to forward the titles of their papers to the Secretary, Mr. John H. Sage, Portland, Conn., so as to reach him not later than November 10.



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ERRATA.

Page 141, line 8, for HUTCHIN'S read HUTCHINS'S.
" 145, line 26, for **montanus** read **montana**.
" 326, line 5 from bottom, for chronometor and watchmaker read chronometer and watch maker.
" 345, line 1, for Four read Two.
" 388, line 29, for PILEOLATED read PILEATED.

Condor, The, VIII, Nos. 4, 5, July–Aug., Sept.–Oct., 1906.
Emu, The, V, Pt. 1, July, 1906
Forest and Stream, LXVII, Nos. 1–13, 1906.
Journal Maine Orn. Soc., VIII, No. 3, Sept., 1906.
Monthly Bulletin Pennsylvania Dept. Agric., Zoölogy, IV, Nos, 1, 2, 1906.
New York Zoölogical Soc., Tenth Ann. Report, for 1905 (1906).
Ornithologisches Jahrbuch, XVII, Heft. 3, 4, 1906.
Ornithologische Monatsberichte, XIV, Heft 7–9, July–Sept., 1906.
Ornithologische Monatsschrift, XXXI, No. 6–8, June–Aug., 1906.
Ottawa Naturalist, XX, Nos. 4–6, July–Sept., 1906.
Philippine Journal of Science, I, Nos. 4–6, May–July, 1906.
Proceedings Acad. Nat. Sci. Philadelphia, LVIII, pt. 1, Jan.–April, 1906.
Science, N. S., XXIII, Nos. 600–612, 1906.
Vermont Botanical Club, Bull. No. 1, April, 1906.
Warbler, The, II, No. 3, 1906.
Wilson Bulletin, XIII, No. 2, June, 1906.
Zoölogist, The, 4th Ser., X, Nos. 114–116, June–Aug., 1906.

PUBLICATIONS RECEIVED.

Arrigoni, E. degli Oddi. (1) Note sul IV Congresso Ornitologico Internazionale tenutosi in Londra nel Giugno 1905. (Atti del Reale Inst. Vineto di Scienze, LXV, pp. 729–798.) (2) Nuove osservazioni sulla cattura della *Fuligula homeyeri* Bald. nel Veneto. (Boll. della Soc. Zool. Italiana, 1906, fasc. iv–vi, and sep., repaged, 12 pp.) (3) Nota sulla cattura di una *Emberiza aureola* Pall. in Toscana. (Avicula, X, 1906, pp. 97, 98.) (4) Notizie sopra un ibrido *Anas boscas* e *Spatula clypeata* della Collezione Contarina. (*Ibid.*, pp. 99, 100.)

Brewster, William. The Birds of the Cambridge Region of Massachusetts. 4to, pp. 426, pll. viii, 1906. (Memoirs Nuttall Orn. Club, No. IV.)

Dresser, H. E. Note on the Eggs of Ross's Rosy Gull. (Ibis, July, 1906, p. 610, pl. xx.)

Finsch, O. (1) Dr. Paul Leverkühn. (Ibis, April, 1906, pp. 364–366.) (2) On a new Owl from Java. (Ibis, July, 1906, pp. 401–407, pl. xvii.)

Hellmayr, C. E. Revision der Spix' schen Typen brasilianischer Vögel. (Abh. d. k. Bayer. Akad. Wiss., II Kl., Bd. XXII, Abt. 3, pp. 564–726, pll. 2.)

Linville, Henry R., and Henry A. Kelly. A Text-Book of General Zoölogy. 12mo, pp. x+462, 233 illust. Ginn & Co., Boston.

Lönnberg, Einar. Contributions to the Fauna of South Georgia. I. Taxonomic and Biological Notes on Vertebrates. (Kungl. Svenska Vetenskapsacademiens Handlinger, XL, No. 5, 1906.)

Oberholser, Harry C. Notes on Birds from German and British East Africa. (Proc. U. S. Nat. Mus., XXX, pp. 801–811.)

Palmer, T. S. (1) Directory of Officials and Organizations concerned with the Protection of Birds and Game, 1906. Circular No. 53, Bureau of Biological Survey. (2) Game Protection in 1905. (Yearbook U. S. Dept. Agric. for 1905, pp. 611–617.) (3) Federal Game Protection: a Five Year's Retrospect. (*Ibid.*, pp. 541–562.)

Palmer, T. S., and R. W. Williams, Jr. (1) Game Laws for 1906. A Summary of the Provisions relating to Seasons, Shipment, Sale, and Licenses. Farmers' Bull. No. 265, U. S. Dept. Agric. (2) Close Seasons for Game in Maryland, District of Columbia, Virginia, and North Carolina, 1906. Poster No. 14, U. S. Dept. Agric., August 18, 1906.

Schalow, Herman. (1) Beiträge zu einer ornithologischen Bibliographie des Atlas Gebietes. (Journ. f. Orn., Jan., 1906, pp. 100–143.) (2) Jean Cabanis. Gedächtnisrede gehalten in der März-Sitzung der Deutchen Ornithologischen Gesellschaft. (*Ibid.*, July, 1906, pp. 329–358.)

Wood, Norman A. Twenty-five Years of Bird Migration at Ann Arbor, Michigan. (Eighth Ann. Rep. Michigan Acad. Sci., pp. 151–156, with table.)

American Ornithology, VI, No. 7, July–August, 1906.

Annals of Scottish Nat. Hist., July, 1906.

Avicultural Magazine, July-Sept., 1906.

Bird-Lore, VIII, No. 4, July–Aug., 1906.

Birds and Nature, June, 1906.

Bulletin British Orn. Club, XVI, No. CXXVI, and Vol. XVII, 1906.

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